The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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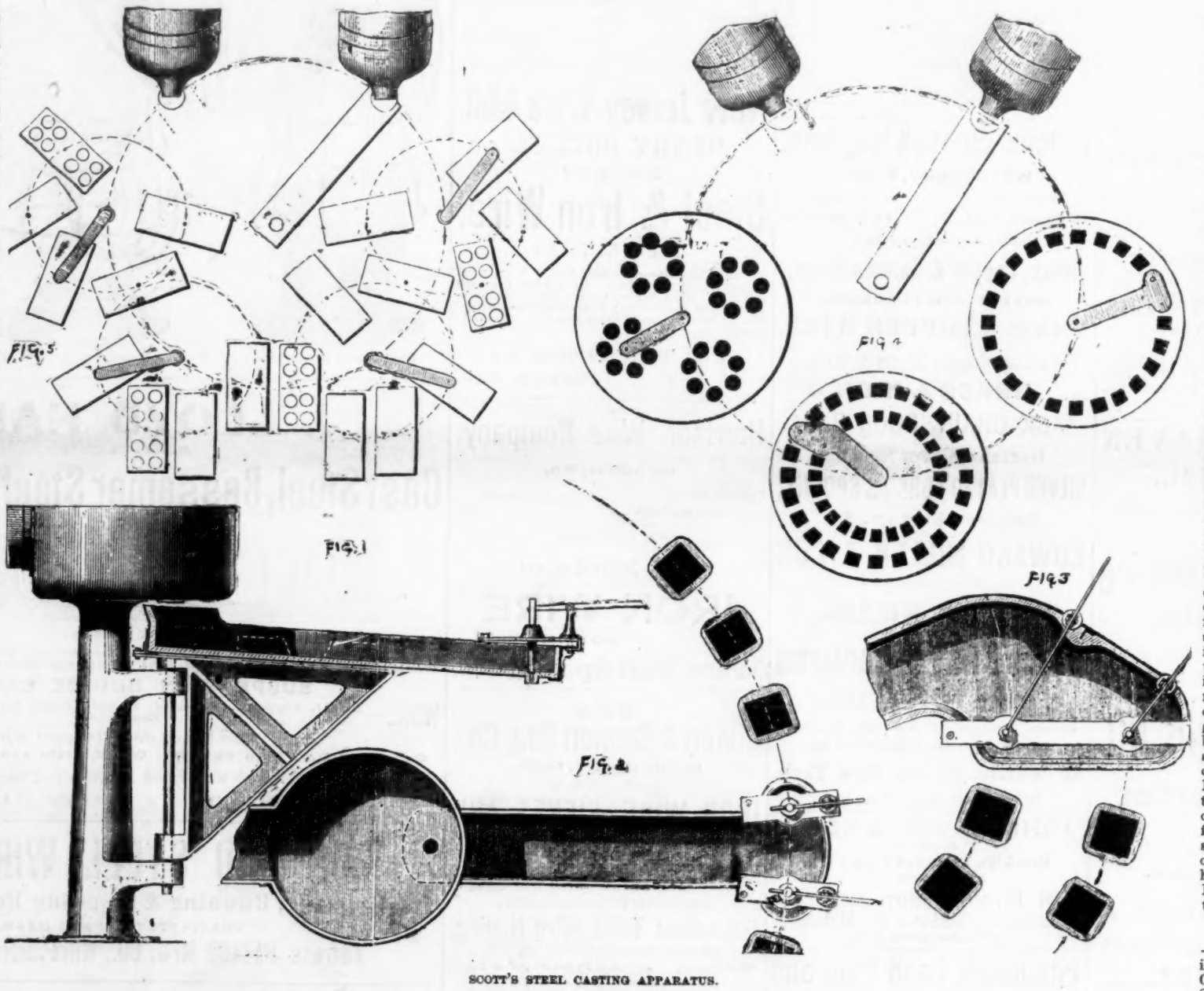
Scott's Steel Casting Apparatus.

The handling of the large masses of liquid metal which the increasing production of modern steel-making plants is rendering a matter of hitherto unparalleled magnitude, forces engineers to closely study all details which might insure enhanced precision and rapidity of work.

American engineers have grappled with the problem very successfully by using large molds, casting heavy ingots, and adapting the rolling and other plant to the altered conditions. In England the tendency has hitherto been to cast the ingots more nearly of the size of the finished product. Although in most cases the American method seems preferable, there are circumstances in which it may be advantageous to multiply the number and decrease the size of molds, and for such emergencies Scott's steel casting apparatus, of which we present a series of illustrations to our readers, is well adapted. The apparatus has as yet been applied only to Siemens open-hearth furnaces, for which it seems destined to acquire a wider range of utility than is apparently open to it for Bessemer pits. The engravings, Figs. 1 and 2, represent, with some minor differences, the apparatus as applied with Dr. Siemens' approval to two 10-ton furnaces at the Railway Steel Works, near Manchester, in June last, where it has given much satisfaction. It will be observed that it consists of a spout or trough made of boiler plate, closed at both ends, and mounted upon a little crane hinged to an iron column, upon which rests the ladle which primarily receives the metal from the furnace. The spout and crane are free to revolve on the vertical axis of the latter in a horizontal plane, and the molds being arranged circularly around the column, the outer end of the spout is brought successively over one or more molds, when, the small stoppers being raised by the levers shown, metal flowing from the ladle passes into the molds. The small stoppers are then lowered, so as to close the orifices in the nozzles and stop the flow of metal through them, and the spout is turned until it is over another pair of molds, which are filled in a similar manner, and so on until all the metal is run. The molds may be arranged in one or more concentric circles, and a form of spout which has been adopted for filling two such circles is shown at Fig. 3. When groups of molds are to be filled, a single-ended spout with one stopper is employed, and the several gits are arranged circularly round its vertical axis. The spout—not mounted in the manner shown—can be made of such dimensions that it can receive, as a ladle, the whole charge of the furnace, and the form may be varied to suit different requirements; but it has not been thought necessary to describe other arrangements in the present communication. The apparatus was started without a hitch, and worked very satisfactorily. In running open-topped molds, a pit of 15 feet diameter was found sufficient for the produce of a 10-ton Siemens-Martin scrap furnace, and in a pit of 18 feet diameter there is room for 38 molds at a time if arranged in two concentric circles, the ingots weighing about 12 cwt. each, or about 23 tons in all. As only about half such a number is required for a charge there is ample time to remove the ingots and replace the molds, and by filling those on one side of the pit the men working at the other side need not be exposed to excessive heat. The nozzle in the ladle head is 3 inches in diameter, and the nozzles at the end of the spout vary from 1¾ inches upward. When the smaller nozzles are used the large ladle stopper should be lowered, so as to diminish the flow till near the end; but it does not require to be closed, because the spout contains the metal which flows into it during the brief interval required to move it from one to another pair of molds, when the small stoppers are shut. From the large size of the nozzles the metal is run very quickly; 10 tons can be poured into the molds in 7 or 8 minutes, or even less if necessary, and very little or no skulls are formed either in ladle head or spout.

Mr. Scott intends to apply his apparatus to Bessemer pits also, and has, in order to provide for the large output of a converter and for a variety of sizes of molds, suggested a method to make the hight of the spout variable at pleasure. Figs. 4 and 5 show typically how pits might be arranged to receive the metal through the agency of a revolving spout. The cost of the apparatus in any of its modifications is very low.



SCOTT'S STEEL CASTING APPARATUS.

A Great Copper Mining Enterprise in Tennessee.

We print below an interesting sketch of the great copper mining, smelting and refining works at Ducktown, Tenn. It was furnished by a scientific gentleman who is thoroughly conversant with his subject, and will be found of interest to all who are engaged in the metal trade, and especially to those who contemplate investing in Southern mineral enterprises.

THE DUCKTOWN COPPER MINES.

To the Editor of The Iron Age: The copper belt upon which is located the Ducktown mines is situated in the extreme southeastern portion of the State of Tennessee, in the county of Polk and about 40 miles east of Cleveland, the nearest railroad outlet. Copper was first discovered there about the year 1849, it being found upon or near the surface in large quantities and of a superior quality, yielding on an average 25 per cent. of fine copper. Capitalists, hearing of this valuable discovery, soon flocked in and invested heavily in mineral lands containing the seemingly inexhaustible supplies of black oxidized ores. The result has been the building up of an industry among the mountains of Tennessee that is creditable and worthy of theenergy and capital expended on it. Immediately after the opening of the old Hiwassee Mine the public excitement became so intense that quite a number of mining companies began to open and develop the various mineral lands in the locality, and in a majority of the mines rich ores were found in abundance, often producing as high as 40 and 50 per cent. of copper. These ores were simply dressed, then packed in boxes and transported in wagons to Cartersville, Ga., a distance of some 80 miles, and thence by railroad to Savannah. From there they were taken by steamer (*via* Cape Hatteras) to the Baltimore Smelting Works at Baltimore, Md., where they were carried through the various processes of roasting, smelting, refining, &c., before the copper was ready to be put upon the market. Although the mines were exceedingly rich, for the want of the necessary smelting facilities, costly and difficult transportation and other drawbacks, the greater part of them lost money, became discouraged and were finally obliged to suspend operations. Somewhere about the year 1856 a nearer communication with railroad was effected at Cleveland, Tenn. (40 miles distant), rendering it much more practicable to ship the ores to Baltimore by the E. T. V. and Georgia Railroad (*via* Lynchburgh, Va). In the year 1858 several mines consolidated and were incorporated as the Union Consolidated Mining Company of Tennessee. The history of mining operations at Ducktown has proved beyond a doubt that it is one of the most valuable copper mining regions in the United States.

At present Ducktown employs, directly and indirectly, about 1000 men, and from the great activity and life displayed throughout all the various departments of the business, as more especially seen in the active operation of the many furnaces, the large amounts of ore roasting in the yards, trains of cars heavily laden with ore, &c., constantly arriving from the mines, one might easily be led to suppose that the price of copper had really advanced to its former market value.

The principal mines owned by the company are the East Tennessee and Mary. The former is over 600 feet in depth, and the latter about 200 feet. Both mines are furnished with all the necessary hoisting and pumping machinery of the very best description, and are turning out hundreds of tons of ores every month. As the mines are some two or three miles from the company's smelting works, the ores have to be transported this distance, which is accomplished by a narrow-gauge railroad, the power being furnished by two locomotives, all owned by the company. The quality and class of ores that are now mined differ, as a general thing, from those taken out during the past, in that they are now mostly of the yellow sulphuret class, which are not nearly as rich in copper as the black oxides. The latter being found upon or near the surface, and above the vein containing the former, have now been mostly worked out. The vein of copper ore (yellow sulphuret) now being mined varies in width from 15 to 60 feet, and seems to be inexhaustible. It averages about six per cent. of fine copper. The shafts are constantly being sunk, and the drifts extended in good solid ore, the faces of the slopes generally presenting a most encouraging appearance.

Every department of this concern is carried on upon thoroughly scientific principles as well as practical knowledge, and the best of talent is employed. The smelting works of the company are situated about one mile from the East Tennessee Mine, and 2½ miles from the Mary Mine, being connected, as before mentioned, by the railroad. They comprise 16 blast furnaces, two calcining furnaces, two reverberatory furnaces for making pig copper, and one refining furnace, the capacity of which, when fully supplied with material, would be equal to 250,000 pounds to 300,000 pounds per month. From this furnace the ingots, slabs and bars are produced ready for market. The blast for these furnaces is supplied by two large and powerful blowing engines. Besides, there are numerous other structures such as dressing works, machine shops, charcoal houses, matte sheds, ore sheds, &c. A large store is also owned and controlled by the company, containing goods of every description, and in which the employees do their trading. The fuel used is entirely charcoal and cordwood. The charcoal is required for the blast furnaces, roast piles, making brasque, &c., and is brought to the works by contractors, large quantities being received every day. The cordwood is chopped by contractors along the banks of the Ocoee River, at some distance from the works, and after lying a while so as to become properly seasoned, is floated down the river until its course is arrested by a pontoon bridge, erected by the company for the purpose, and designed for catching the wood and holding it until it is taken out. The boats composing the bridge and over which the roadway is carried, are held in their places by strong steel wire ropes. From the bridge to the company's railroad is only a short distance. Many thousand cords of wood are required every year. It is used for roasting the ore and matte, firing the reverberatories, refinery, calciners, locomotives, boilers of the blowing engines and of the various hoisting and pumping engines about the mines. Had the present economical management been brought into play during past years this would have been one of the largest mining countries in America. The people should appreciate the public spirit and enterprise, as shown by the present company, in building up on a permanent basis an industry that gives employment to hundreds of people both here and elsewhere. Nine-tenths of the business is done on contract, and those who will work get liberal pay for their labor. Many of the employees have been furnished with constant employment for nearly 20 years, and never has there been any of those difficulties and troubles between capital and labor that have so thoroughly shaken other portions of the country. B.

CHATTANOOGA, June 21, 1878.

Government Treasure Vaults in Wall Street.

In addition to the great vault attached to the Assay Office in Wall street, built about three years ago, and having space for the storage of $8,800,000 in silver coin, the Federal government has in course of construction in the basement of the Sub-Treasury building still another of far larger dimensions, which will be finished Oct. 1. The former is 18x17½ feet, and 8 feet in hight, made of boiler iron; the latter, 47x28 feet inside, and 12 feet high, made burglar proof, designed for the expected large accumulation of siver coin under the operation of the new law. This new vault is building under a contract with Geo. L. Damon, of Boston, who has about twenty men employed on the work, and it is spoken of as the largest in the world, considered as a single inclosure, surpassing even that of the Bank of England. The estimated cost is $22,000. The outside granite walls are six feet thick, while the safe proper will be two inches in thickness on all sides, formed of alternate layers of iron and steel. The plates for the floor are laid directly on a stone flagging, supported by a solid bed of concrete, so that it would be folly for burglars to attempt to reach the treasure within by any process of excavation from outside. The top of the vault will be supported by rolled iron beams and girders let into granite columns, while lattice partitions of iron to support the bags of coin will divide the vault into a dozen stalls, arranged on either side of a longitudinal aisle. The general plan is not unlike that of an ordinary horse stable, and keeping in mind the heaps of treasure to be stored on the spot hereafter, is suggestive of excellent feeding. Four openings in the ceiling and as many in the floor, covered by strong gratings, will provide for ventilation. The process of cutting out the brick floor of the Sub-Treasury building so as to convert two stories into one, is the laborious task now engaging attention, directly under what is known as "the gold-room." When completed, communication between the gold-room and vault will be by means of an elevator and staircase, so that coin can be easily transferred. Mr. Caywood is the superintendent immediately in charge, subject to directions from Thos. R. Jackson, superintendent of repairs of all government buildings hereabout, while Mr. Jas. G. Hill is superintending architect.

A Large Quartz Mill.—A mammoth quartz mill is soon to be shipped from California to the Father De Smet mine in the Black Hills. A contract has been made with the Union Pacific for 60 cars to transport the machinery. The mill building is to be 120 feet long, 100 feet wide, and 40 feet high to the eaves. This company has ordered three miles of iron pipe from Chicago, which will fill 20 cars, and this is merely for the cañons across which the supply ditch is to pass. Over $200,000 will be expeneded in the 36 miles of this ditch from Spearfish Creek to the De Smet mill. The mine cost $400,000, and the mill to be put up is said to be the largest one that ever went into a mine.

The relative values of our inter-State and foreign commerce are shown by the following interesting figures: The value of all the shipping, American and foreign, employed in our foreign trade is $200,000,000; the value of the railroads of the United States is $4,600,000,000; and while the value of all our exports and imports carried on the sea is $1,121,634,000 per annum, the value of the commodities carried by rail alone in the interior is $18,000,000,000. This shows that the value of the railroads of the country is about 23 times that of all the ships engaged in our foreign trade, and that our internal commerce carried on railroads alone is 16 times as great as that of our foreign commerce. The comparison does not include that portion of our internal commerce carried in steamboats and ships on the rivers and lakes and coastwise; if this were added, it would make the internal commerce 25 times as great as the foreign commerce. Before the war our foreign commerce was in more favorable ratio with our inter-State commerce.

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SEE PAGE 9.

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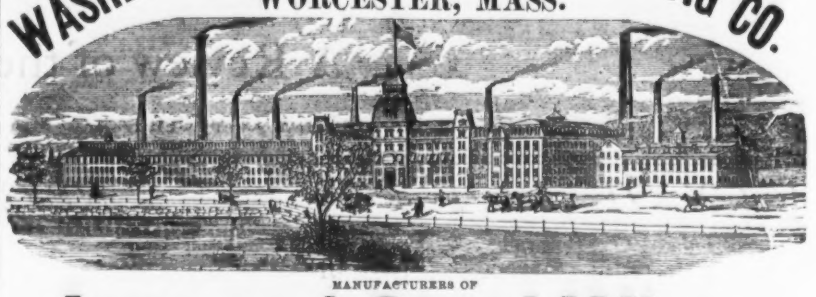

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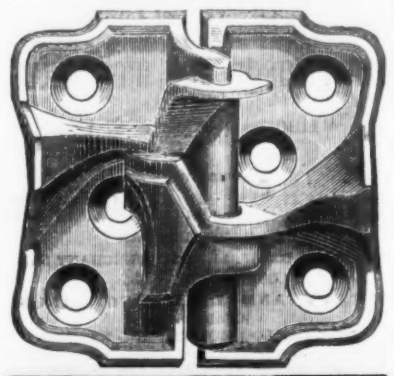

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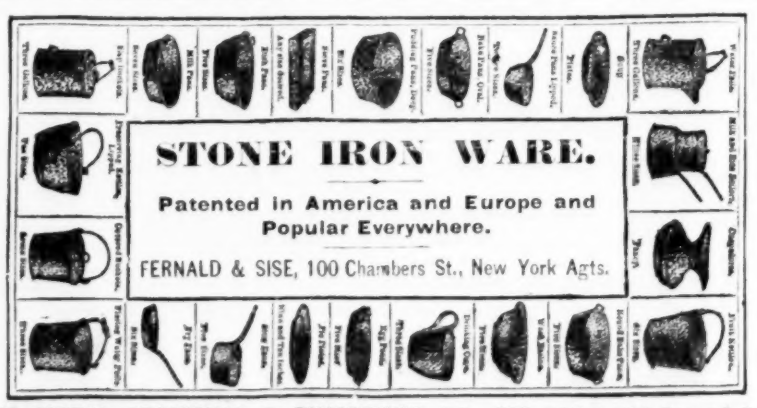

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How Strikes are Managed in France.

A correspondent of the London *News* says: In these days of eager competition it is absurd to suppose that labor will not always fetch what it is worth, but nothing is gained by temporarily forcing it above its value. Such inflation of wages naturally tends to falls, which to the workmen may be ruinous. It is to be hoped that this truth will commend itself to the French working classes before they are put in possession of the liberties for combining and striking which Englishmen enjoy. For the present there is no prospect of their being endowed with these liberties, for even liberal republicans are loth to advocate them lest they should arouse that terrible "Question Sociale" behind which so many dangers are felt to be lurking. So afraid are cautious men of allowing even the thin end of the said Q. S. to be introduced that they will not hear of allowing coöperation for charitable purposes. An association for relieving cripples at Rouen must not have any kinship with a similar establishment at Nantes or elsewhere. Institutions which seem to be exempted from this rule, and which have branch offices in different places, are all under the special control of government and generally flourish on State grants. When you talk to a Frenchman of societies like the Foresters and the Odd Fellows, which reckon their members by the hundred thousand, he answers that such colossal associations would be impossible in France. They would develop into political caucuses and try wild experiments in the way of communism. As to trade unions, the conservative party think that the law has already gone too far in allowing the workmen following the same trade in one particular city or commune to combine. Whenever these gentlemen have been in power they have quelled strikes by the effectual but ultimately ruinous process of making soldiers do the work of the strikers. When, in 1865, the journeyman hatters of Paris struck, an order of the day was read in all the barracks of Paris and the garrisons of the environs, setting forth that soldiers who were hat makers by trade might have leave to go and work, on condition of accepting the rates of pay offered by the masters. Many, of course, jumped at the proposal, in order to get a few weeks' holiday. In that same year, 1865, there was a strike among the Parisian cab drivers, and again soldiers were pressed into service; this time in such large numbers that the strike came to an end in less than a week. We have called this a ruinous process, however, because it sows ill-will between the army and the working classes, and the fruit of such enmity appears in civil wars.

The police are also made to play a large part in the repression of French strikes, and we cannot help thinking that this part is not a fair one. There was a big strike at the Creuzot Iron Works in 1870, another near St. Etienne in 1873, and now there is one among the miners at Decazeville. On all these occasions we have heard of wholesale arrests being made on the charge of picketing. Men who had not used any threats to deter non-unionists from working, but who had simply been found pleading the cause of the strikers, were charged with rioting, while others, who were strangers to the district, and who had come to do a little agitating in an amateur capacity, were adjudged guilty of the more heinous offense of political conspiracy. A French strike somehow always get mixed up with politics. Be the strikers never so careful, their ringleaders almost invariably end by getting into jail, and the judges often add to the penalties of imprisonment a deprivation of civil and political rights, along with police supervision for a term of years. We cannot call to mind any French strike which has resulted in a complete victory for the strikers. Government takes alarm at the first signs of combination, and the masters, being backed by the whole strength of the administrative mechanism, naturally decline to make concessions.

The First Steamboat Voyage.

Threescore and thirteen years have rolled by since Fulton died, at the age of forty-nine, eight years after the trial trip of the Clermont on the Hudson River, from New York to Albany—the first practical demonstration that steam could be applied to the propulsion of vessels with entire success. Of those who enjoyed the privilege of being on the Clermont's deck before the start, during the trip or just after the arrival at Albany, there is but one alive, and he was carried in his mother's arms at the time, being only two years old. His personal remembrance of the event, of course, does not amount to much, but he has, nevertheless, a store of information concerning the trip not in the possession of anybody else, for as soon as he became old enough to realize the importance of the matter, he naturally sought with more assiduity than a person less directly interested would exhibit for facts pertaining to the occasion. This gentleman is the Rev. Frederick Reynolds Freeman, a Baptist clergyman of Illinois, now, with his wife and children, on a visit to this city. Mr. Freeman is in his seventy-third year, white-haired, but fresh looking and vigorous.

"The event is like a dream to me," says Mr. Freeman. "Probably my memory would now be unable to reach it but for the constant rehearsals of the scenes and incidents made to me in my youth. These vividly impressed the whole upon my mind, and, together with my faint personal recollection of the occasion, left a more faithful picture than unassisted tradition or history could paint upon a memory less allied to the circumstances.

"The first steam packet (of 140 feet keel and 16½ feet beam) was trim and handsome enough, excepting the boilers, machinery and smoke-stack, which were rude, cumbrous and of extremely formidable appearance. The side wheel, too, was a clumsy affair, uncovered and with twelve huge paddles, held in their place by a ring half way between their extremities and the hub, that sent water splashing upon the deck with every revolution. The top of the smoke-stack was about 30 feet above the deck—nearly as high as the two masts, from the rear of one of which floated the Stars and Stripes.

"Hours before she started a great multitude had assembled along the wharfs to witness the expected inglorious ending of what was generally known as 'Fulton's Folly.' Cries of 'God help you, Bobby!' 'Bring us back a chip of the North Pole!' 'A fool and his money are soon parted!' &c., were frequent, loud and annoying. Fulton, however, knew that the crowd were sincere in their ridicule, and, with a confident smile, went on superintending preparations for the start, as if he knew that triumph would presently more than overbalance the sneers, jibes and cat-calls of the vulgar, and the pitying manners of the more refined. Smoke issues from the stack; the hawser is drawn in; the side-wheel quivers; it slowly revolves; Fulton's own hand at the helm turns out the bow; he is pale but still confident and self-possessed; the Clermont moves out into the stream, the ponderous machinery thumping and groaning, the wheel frantically splashing and the stack belching like a volcano; but the Clermont steadily moves; all aboard swing their hats in the air, and give a cheer that is immediately taken up by the entire multitude on land; the Pennsylvanian has triumphed, and the hitherto incredulous and mocking populace of New York are the first to do him honor; the crowd remain cheering on the piers until the Clermont is out of sight up the Hudson."

Mr. Freeman says that the boat arrived at Albany on September 17, 36 hours after starting from New York. It had not been continually in motion, the party having stopped at the residence of Chancellor Livingston on the way up. The speed was at the rate of five miles an hour. The appearance of the strange vessel as she steamed up the river had a remarkable effect, even in daytime, upon the crews of craft passing by, for comparatively few of the skippers coming down could, in those days of slow mail and no telegraph, have been prepared to encounter such an oddity; but at night the Clermont spread consternation and terror on all sides. It was very dark, and the fires were fed with dry, white pine wood, which, when stirred, would send up columns of flame and sparks from the mouth of the tall stack. This apparent volcano, moving steadily through the darkness up the middle of the river and accompanied by the rumbling and groaning of the hard-laboring machinery, was well calculated to strike terror into the hearts of sailors on the sloops and other craft coming down with grain and general farm produce, who had never heard of any motive power for vessels except wind, and who, withal, were extremely superstitious.

"My father and others told me," says Mr. Freeman, "that whole crews prostrated themselves upon their knees and besought Divine Providence to protect them from the horrible monster that was marching on the tides and lighting up its patnway by its fires."

When the members of the Freeman family went aboard the Clermont, upon its arrival at Albany, Mrs. Freeman observed a workman emerging from the engine room—a place very suggestive to her of the infernal regions—carrying in his hands a ladle filled with molten lead. With this he proceeded to stop up holes whose presence here and there in the rude machinery was indicated by escaping steam. Captain Freeman then learned that the workman had been busily employed doing the same thing ever since the Clermont had left New York. The people of Albany had been apprised of the arrival in advance, and the whole town turned out to receive Fulton and his steamboat, giving them an enthusiastic reception. After a short stay the Clermont returned to New York, making the trip in 34 hours—*Philadelphia Times.*

Warming Dwellings in Summer.

The Cincinnati *Artisan*, in a recent issue, has a very important article upon the necessity which often occurs for warming dwellings in the summer. People in general are prone to treat with contempt the idea that a fire is ever needed in the summer season for warmth. We frequently hear remarks like "The idea of a fire in July; it's absurd." The weather clerk does not, however, appear to think that a cold morning or evening or a cold east wind is an absurdity in July, and sends them accordingly, and people shiver, but will not warm themselves because it happens to be a summer month. The *Artisan* says:

As we approach the warm season of the year, and the temperature of the air becomes high enough to cause us to court the genial breeze from without, it is the custom to put out the fires, remove the stoves and leave dwellings without any artificial means of heating until the chill breath of autumn brings the furnaces and stoves again in use. It has long been known that sickness prevails to a much greater extent in summer than in winter, but many do not recognize the causes of the diseases of the warm season. A warm and dry atmosphere is not unwholesome, but when, in cloudy and rainy weather, southerly winds bring a sultry air which dampens everything around us, the atmosphere is loaded with the germs of disease and fire is needed to destroy them.

The walls, the ceilings, the floors of apartments, should never be allowed to become damp. Sometimes, when the warmth of the air is oppressive, fire is more needed to preserve health than it is at another season to protect us from the cold of winter; and the rooms of a dwelling should never be left without means of warming and drying. The investigations of science show that many of the most fatal diseases are caused by the germs of vegetable and animal life and that a humid atmosphere is most favorable for their propagation. It is, therefore, neglecting to avail ourselves of the great discoveries of the age, and failing to protect ourselves from the scourges which so fearfully afflict families, when we ignore the dangers which surround us. Apartments exposed to the full action of the sun may be less comfortable in dry, hot weather than those from which the sun's rays are excluded, but generally they will be found more wholesome.

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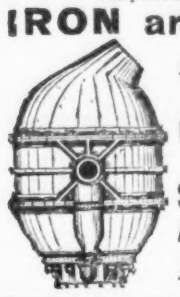
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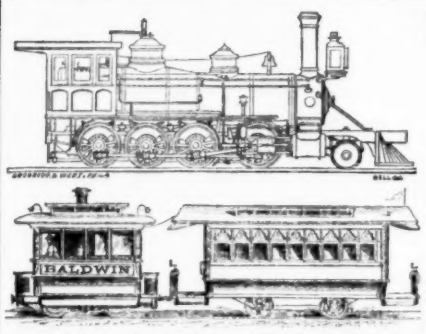

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261 S. 4th St., Philadelphia.

Iron.

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H. E. COLLINS & CO.,
BROKERS IN
Manufactured IRON, NAILS AND STEEL,
Pig Iron, Iron and Steel Rails,
METALS,
Railway Supplies, Old Rails and Railway Scrap,
PITTSBURCH, PA.

CHESTER IRON COMPANY,
MINERS AND SHIPPERS OF
Magnetic Iron Ore.
The "BLUE" (Red Short) and "RED" (Neutral) Bessemer Ores, from Hacklebarney and Chester, New Jersey.
Price "Blue" Ore hand-broken and selected for July is $2.50 cash, f. o. b. Hacklebarney Mines.
J. WESLEY PULLMAN, Treas., 407 Walnut St., Philadelphia.

Edward J. Etting,
IRON BROKER AND COMMISSION MERCHANT,
230 S. Third St., Philadelphia, Pa.
CENTRAL IRON WORKS, - Harrisburgh, Pa.
Boiler Plate, Tank Iron, &c.,
PIG, BAR AND RAILROAD IRON,
Old Rails, Scrap, &c.
STORAGE WHARF & YARD,
DELAWARE AVENUE ABOVE CALLOWHILL STREET, connected by track with railroad
Cash advances made on Iron.

The Cambria Iron and Steel Works,
Having enjoyed for over TWENTY YEARS the reputation of producing the best quality of
RAILS,
have now an annual capacity of
100,000 Tons of Iron and Steel Rails, Splice Bars, &c.
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CAMBRIA IRON COMPANY,
No. 218 South 4th Street, Philadelphia.
Or at the Works, *JOHNSTOWN, PA.*
Or J. S. KENNEDY & CO., New York Selling Agency, *41 Cedar St., N. Y.*

The Iron-Masters' LABORATORY.
Exclusively for the
Analysis of Ores of Iron, Pig and Manufactured Iron, Steels, Limestone, Clays, Slags and Coal for Practical Metallurgical Purposes.
No. 339 Walnut St., Philadelphia.
J. BLODGET BRITTON.

This laboratory was established in 1866, at the instance of a number of practical Iron Masters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for smelting and refining purposes. The object being to make it at once a convenient, practically useful, and comparatively inexpensive adjunct to the Furnace, Forge and Rolling Mill.

CHARGES TO IRON WORKS.

For determining the per cent. of Pure Iron in an ordinary Ore	$4.00
For the per cent. of Pure Iron, Sulphur and Phosphorus in do	12.50
For each additional constituent of usual occurrence	1.50
For those of unusual occurrence or difficult to determine, the charge must necessarily depend upon circumstances.	
For determining the per cent. of Sulphur or Phosphorus in Iron or Steel	7.00
For each additional constituent of usual occurrence	5.00
For the per cent. of Carbonate of Lime, and insoluble Silicious Matter in a Limestone	10.00
or each additional constituent	2.00
or the per cent. of Water, Volatile Combustible Matter, fixed Carbon, and Ash in Coal	12.50

For determining the constituents of a Clay, Slag, Coke, or of an Ash in Coal the charges will correspond with those for the constituents of an ore.
For a written opinion or letter of instruction the charge must necessarily depend upon circumstances.
Printed instructions for obtaining proper average samples for analysis furnished upon application.

THE PHŒNIX IRON CO.,
410 Walnut Street, PHILADELPHIA.
Manufacturers of
CURVED, STRAIGHT AND HIPPED
Wrought Iron Roof Trusses, Beams, Girders & Joists,
and all kinds of Iron Framing used in the construction of Iron Proof Buildings.
DECK BEAMS, CHANNEL, ANGLE AND T BARS
curved to template, largely used in the construction of Iron Vessels.
PATENT WROUGHT IRON COLUMNS, WELDLESS EYE BARS,
For Top and Bottom Chords of Bridges.
Railroad Iron, Street Rails, Rail Joints and Wrought Iron Chairs.
REFINED BAR, SHAFTING, and every variety of SHAPE IRON made to Order.
Plans and Specifications furnished. Address,
SAMUEL J. REEVES, President.

The Standard Steel Works.
LOCOMOTIVE AND CAR WHEEL TIRES,
Manufactured from the celebrated OTIS STEEL.
BRAND
STANDARD.
Quality and efficiency fully guaranteed. Prices as low as any of the same quality.
We manufacture
Heavy and Light Forgings, Driving and Car Axles, Crank Pins, Piston Rods, Etc.
Works at Lewistown, Pa. Office, 220 S. 4th St., Philadelphia, Pa.

BOSTON ROLLING MILLS
Manufacture
Extra quality small Rods, from best selected Scrap Iron
SWEDISH AND NORWAY SHAPES,
Nail and Wire Rods. Also,
Horse Shoe Iron, Hand Made Horse Shoes & the Boston Horse Shoe.
BOSTON ROLLING MILLS, W. R. ELLIS, Treas.
Office, 17 Batterymarch St., Boston.

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JAS. ROWLAND & CO.,
Kensington Iron, Steel & Nail Works,
920 North Delaware Ave., - - PHILADELPHIA,
Manufacturers of the
Anvil Brand Refined Merchant Bar Iron.
Also, the James Rowland & Co. Kensington Nails, cut from their Refined Anvil stock. Also, Plow and Cultivator Steel, Rounds, Squares, Flats, Bands and Hoop Iron.
Correspondence with Dealers solicited.

BRADLEY, REIS & CO.,
NEW CASTLE, PA.,
Manufacturers of every description of
PLATE & SHEET IRON
OFFICE, at Works.

PENCOYD IRON WORKS.
A. & P. ROBERTS & CO.,
Manufacturers of
CAR AXLES.
BAR, ANGLE, TEE AND CHANNEL IRON.
Office, No. 265 S. Fourth St., Philadelphia. Agents for the sale of Glamorgan Pig Iron.

Bonnell, Botsford & Co.,
Iron, Nails & Spikes.
YOUNGSTOWN, OHIO.

Spooner & Collins,
COMMISSION AGENTS,
PIG IRON
Blooms, Bar, Sheet & Hoop Iron.
217 N. Third St., St. Louis.

PATENT MINERAL WOOL,
The Best and Cheapest Non-Conductor or Insulator of Heat or Cold.
Used for covering steam pipes, boilers; for lining water pipes, hydrant and street washer boxes, refrigerators, cold storage houses, &c. Cheap enough for deafening walls of dwellings, factories, &c. State rights for sale. Send for circular to
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Concentrated Borax in sacks.
Selected concentrated Borax in barrels.
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Pulverized Borax in pound and half pound packages.
Being *Sole* Agents for *Messrs. Smith Bros.*, OWNERS OF THE MINES, we are enabled to sell at the *lowest prices.*
WM. T. COLEMAN & CO.,
NEW YORK, 180 Pearl Street.
SAN FRANCISCO, CAL., cor California and Front Sts.

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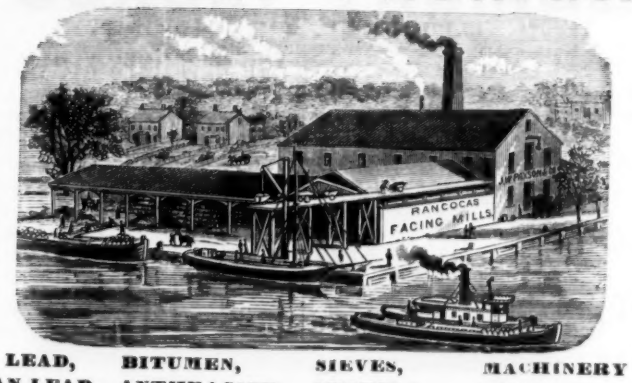
MANUFACTURERS' FOUNDRY SUPPLIES.



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GERMAN LEAD,	BITUMEN,	SIEVES,	MACHINERY SAND,
AMERICAN LEAD,	ANTHRACITE,	SHOVELS,	BRASS "
GRAPHITE,	CHARCOAL,	BRUSHES,	CHANDELIER "
PLUMBAGO,	MINERAL,	CRUCIBLES,	STOVE PLATE "

J. W. PAXSON & CO. *OFFICE & STOREROOMS, 514, 516 and 518 Beach St., Philadelphia, Pa.*

Draw-Up Presses.

We illustrate herewith a novelty in presses by the Mohawk & Hudson Manufacturing Company of Waterford, N. Y. It will be seen that in this press the action of the screw is simply to draw the platen (or follower) and bottom platform of the press together, instead of forcing them together as in the ordinary form. This apparently simple change in the method of applying the screw makes a most radical change in the construction of the press, for the screw takes the place entirely of the strong upright and cross beam of the ordinary press. Except the platen, bottom platform and the screw, all the heavy portions of the ordinary press are abolished, making a great saving, not only in weight but in cost.

Fig. 1 shows the press in its simplest form; the screw and platen are represented at the side. This press consists practically of only the moving parts of the ordinary press. In this case it is intended for a colander press, and is especially suited for jelly, beef tea, cranberries, cheese, mashing squash or potatoes, &c. The square draw-up shown in Fig. 2 is for corned beef, mutton, boned turkey and other meats. In all these presses the plungers are drawn up out of the liquid by the screw so that the pumace, in the case of fruits, or the meat is not saturated with the liquid remaining on the bottom. Fig. 3 is the lard press. Part of the "hoop" or side of the press is broken away in each of the figures to make the construction clearer. The lard presses are made

Fig. 1.

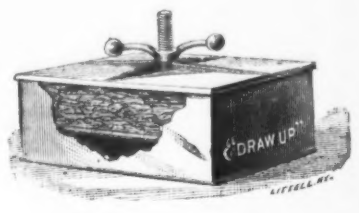


Fig. 2.

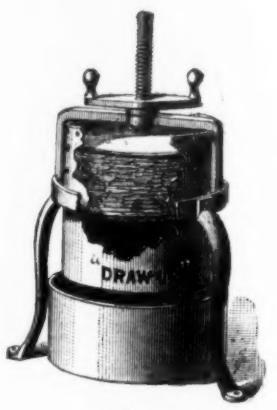


Fig. 3.

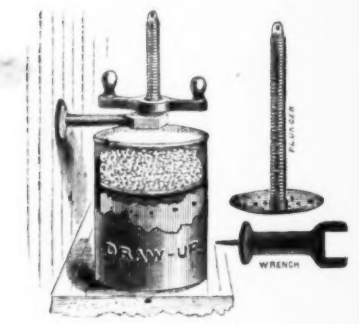


Fig. 4.

DRAW-UP PRESSES, BY THE MOHAWK AND HUDSON MANUFACTURING COMPANY.

exceedingly strong, and are, it is said, able to sustain enormous pressure. This press is especially designed for the use of butchers and packers. The "scrap" is first pressed, then the nut is run up, the arch lifted up and its feet placed in the supports, and the nut being then run down, draws the cake of "crackling" out of the cylinder. The pin or nut on the lower end of the stem is then removed and the bolt drawn out of the cake of crackling. Fig. 4 shows a form of press especially adapted to the use of druggists, and, as will be seen, it is accompanied by a wrench which is screwed into the wall and which holds the whole from turning when the power is applied. The strain is all borne by the two platforms and the screw, and even in the one-half gallon drug press the ultimate tensile strength of the iron is several tons. To get a pressure of such an amount in an old-style press with two uprights and cross bar would necessitate an exceedingly heavy construction.

In this city the agents for the manufacturers are Messrs. Fernald & Sise, 100 Chambers st.

Labor and Wages in Scotland.—Vice-Consul Scidmore replies to the labor circular of the Department of State by sending very complete tables of the wages paid for different classes of labor in the district of Dunfermline. Carpenters, bricklayers, masons and plasterers receive from $1.26 to $1.62 daily; blacksmiths, engineers, founders, turners and other machinists about $6.56 a week; factory hands are variously paid, according to work done and skill, from 96 cents a week for the lowest grade of women weavers to $8.27 for molders. The remuneration of labor, as compared with rates prevailing five years ago, is very low. In coal mining, which is one of the leading industries, the depression is very marked, miners now receiving not one-half the wages obtainable in 1873. In another branch of industry of first importance, namely, the linen trade, the condition is almost equally cheerless. Overproduction and a slackening in the demand from the American market have during the past five years brought this trade to sore straits. Particular mention is made by Mr. Walker, assistant inspector of factories, in his report for the half year ended Oct. 31, 1877, of the iron trade. He says: "While, as I have stated above, all the industries of the country coming under my observation are at present more or less depressed, I am not aware of any of them being more so than the iron trade in the North of England and Scotland. One of the reasons assigned is the damaging effect of foreign competition. Within the last year or two a large railway station has been erected in Glasgow, and it is a well-known fact that all the iron required in its construction was brought from Belgium. As Glasgow forms the center of the iron trade in Scotland, the circumstance above referred to is significant and startling."

The Drainage of Cities.—A strong argument in favor of good drainage in cities has been furnished by the experience of St. Louis. The number of deaths in 1860 was nearly 6000, and the average mortality for the succeeding four years was 5600. The city then had a population of 150,000. In 1870 the deaths numbered 6670, and although there was a considerably increased mortality in 1872 and 1873, the average number of deaths for the last four years has been but 6400, with a steady decrease. Yet the last census gave St. Louis a population of 310,000, and it is now estimated at not less than 450,000. As a fact, the mortality last year was less than the average during the period between 1860 and 1870. At the date first named St. Louis had practically no sewers, and no rapid extension of the system was attempted until 1865. Since then such improvements have been made in this direction that the city now has 180 miles of sewers. As no other great changes have been witnessed in a sanitary point of view, it is concluded that the decreased number of deaths must be attributed to the development of the sewer system.

Orders from Brazil.—The Brazilian mail which arrived in New York last week on the City of Rio de Janeiro brought several important orders to local manufacturers. To Messrs. J. P. Reed & Co. came a contract for the supply of 2000 axes, 4000 case knives, 50 complete sets of carpenters' tools and a saw mill, together with steam engines and boilers. This order comes direct from the Brazilian government, which has undertaken the removal of the people who are willing to leave the overcrowded cities and settle on the lands in the region of the Amazon valley. To such as are prepared to take this step the government is disposed to make a grant of lands, tools and supplies. This idea is understood to have had its origin in the observations of Dom Pedro in this country in respect to the system of pre-empting government lands. Another order was for a large consignment of boots and shoes. The same mail brought requests for a large line of samples of various goods, and the Rio de Janeiro, which leaves on the return voyage in a few weeks, will take out a large bulk of samples of Philadelphia-made prints, drills, glassware, railroad tools, steam pumps, varnish, bronze ware, agricultural machinery, glass lamps, spades and shovels and other goods. "There is a great demand in the Brazilian market for cheap cotton goods," says one correspondent, while another chimes in with the intimation that "the people are delighted with the idea of being able to get their orders for American goods filled not only more promptly, but also at much cheaper rates than the English traders have put their goods upon the market.—*Phila. Record.*

Signing Documents.—The St. Louis *Commercial Gazette* prints the following bit of good advice to farmers and others: The season has now come when the insinuating agent and patent rights man visits small towns and country villages, seeking to trap the unwary by tricks which have become so common that they ought no longer to find a victim. The swindling is almost invariably done by inducing the farmer or country merchant, on some pretext, to put his name on paper. One of the most successful and the easiest is to obtain the customer's signature to what purports to be a receipt. It is in fact a printed receipt and contains a multiplicity of words. It is printed on a slip of paper seven or eight inches long. The place for the signature is naturally in the right-hand lower corner. The customer has bought something from the smooth-spoken agent, and honestly enough is perfectly willing to sign a receipt. Let that paper be cut in two, up and down in the center, and the right-hand half will be an unobjectionable 30 or 60 days' promissory note. The signature is well known in the neighborhood, it is sold or traded long before maturity to some *bona fide* and innocent purchaser, and the unsophisticated maker has no legal defense. Or possibly a fence-wire agent comes along with a sample coil of wire. The customer wants a few rods of wire fence and signs an agreement to pay on delivery four cents per foot for five coils of wire. When delivered it appears that the coils each contain a quarter of a mile of wire. By the same trick the festive lightning-rod agent sells the victim enough of lightning rod to thatch the roof of the house with when only 30 feet were needed. The safe way is not to transact business with an itinerant agent who is a stranger, unless they can get along without your signature to a written or printed instrument.

Iron.

HOLLOW CHILLED ROLLS.

U. S. PATENTS, Nov. 9, 1869, and Oct. 9, 1877. ANY REQUIRED DIAMETER OR LENGTH.

Suitable for Plate, Sheet, Nail Plate, Pipe Iron, Bridge Iron. Either Iron or Steel Rolling. Orders addressed

TOTTEN & CO., Fulton Foundry, Pittsburgh, Pa.,

Manufacturers of Rolls and Rolling Mill Machinery of every description, will receive prompt attention.

As convincing proof of their great superiority we refer to the following testimonials of practical men:

BELLAIRE, OHIO, Feb. 4, 1878.
We take pleasure in saying that we have used your Hollow Chill Rolls for 12 months, and find them to be the best chill Rolls we have ever used in our mill. The necks keep very much cooler and save grease and steam, and we can expand the body of Roll very much better than we can the solid Roll. We will order another pair as soon as we start our mill.
BELLAIRE NAIL WORKS,
A. L. WETHERAL, Manager.

BELLAIRE, O., Dec. 30, 1877.
I think your Rolls are just what you claim for them. The iron in them is fine and good, and the chill is even all over alike. They are the best for nail plate I ever worked. I can run a set of them three months without dressing, and make as good surface and good edges as you see on hoops, and they are ready to work fine iron at any time without change.
JAS. PATTERSON, NAIL PLATE ROLLER.

PITTSBURGH, April 9, 1878.
I have tried the Hollow Chill Rolls for sheet steel for twelve months, and believe them to be in every way superior to solid rolls. They keep their surface and produce handsome work. They do not heat in the necks. Your Solid Rolls on small mill for steel wire, &c., also give us great satisfaction, combining surface and strength. DAVID SHAW,
Manager for ANDERSON & PASSAVANT.

LA BELLE STEEL WORKS, April 10, 1878.
We have been using the Hollow Chill Rolls for a year, and are more pleased with them than the solid; have no hot necks or "springing" rolls, with less number of dressings, and are now free from cobweb checks or cracks on face we were so much troubled with in our solid rolls. SMITH, SUTTON & CO.

CRESCENT STEEL WORKS, Pittsburgh, April 11, 1878.
We have used several pairs of your Hollow Chill Rolls. One pair ran until we dressed all of the chill off; the others are still in use and doing well.
MILLER, METCALF & PARKIN.

CONSHOHOCKEN, PA., April 11, 1878.
In reply to your favor of 9th, we have to say that the Hollow Rolls made by you, and on which we are now making Sheet Iron, are giving good satisfaction. The work we are doing on these Rolls is of the very hardest kind, and tests rolls more severely than almost any other kind of work, making sheets Nos. 18 and 20, 8 to 9 feet long at one heat, from a bar 4½ in. wide. They are good hard surface, and even chill, and are still perfect after 6 months' use. We think these Rolls are superior to any we have now in use.
J. WOOD & BROS.,
Manufacturers Imitation Russia Sheet Iron, &c.

CATASAUQUA, Pa., April 11, 1878.
The Hollow Chilled Plate Rolls received from you last summer have given us entire satisfaction, and if we were in need of Plate Rolls to-day we would order another pair just like the last. When we need pair you will hear from us. CATASAUQUA MFG. CO.
OLIVER WILLIAMS, General Manager.

PENNSYLVANIA IRON WORKS,
PITTSBURGH, April 11, 1878.
It affords us pleasure to testify to the merits of your Hollow Chill Rolls, after constant use of them in our mills at Pittsburgh and Scottdale. The first one was put in one year ago, and we have taken particular notice of their behavior since that time. We say, as we have often said before, that we prefer them to any other rolls for their superior surface and general durability. We think they retain their "shape" better than solid rolls and keep cooler in the necks. We are at present using all Hollow Rolls, and when in need of more will, of course, order hollow ones.
EVERSON, MACRUM & CO.

RUSSIA SHEET MILL, Niles, O., April 13, 1878.
We have used your Hollow Chill Rolls in both our sheet mills for the past 12 months, and can confidently recommend them as strong, serviceable Rolls.
GEO. SUMMERS, Supt.

PITTSBURGH, April 17, 1878.
We have been using your Hollow Chill Rolls for several months, and so far they have given great satisfaction, and we see no reason why they should not continue to do so. We have kept a very careful watch so as to detect any defects in surface or other conditions, but have found nothing but what we can cheerfully commend. JOHN I. WILLIAMS,
(For Graff, Bennett & Co.)

PITTSBURGH, April 17th, 1878.
We have been using your Hollow Chill Rolls for nearly twelve months in our Universal Mill. We find that they do not expand out of shape in the body like solid rolls, and that we are consequently able to roll plates of more uniform thickness and with straighter and better edges. We consider them superior to solid rolls. JOHN G. MATTHEWS,
Manager at WILSON, WALKER & Co.

NEWPORT, KY., April 19, 1878.
After a thorough trial of your Hollow Chill Rolls on plates, sheets and wide fire bed, we have no hesitation in saying that they are the best Rolls we ever saw. They keep their surface, produce better finished iron, and do not get out of shape like solid Rolls. They have been thoroughly tested as to strength and are satisfactory in every respect. JOHN JORDON,
Manager SWIFT IRON AND STEEL WORKS.

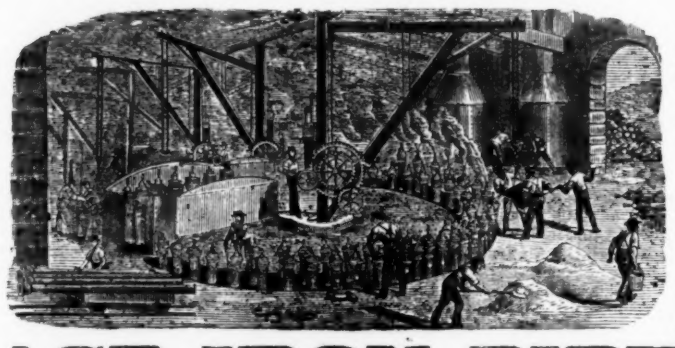
PHILADELPHIA, April, 19.
The pair of Hollow Chill Rolls purchased from you we have been running for some time, and they give entire satisfaction. HENRY DISSTON & SONS.

PITTSBURGH, April 2, 1878.
The Rolls are now in the turning shop, undergoing the second dressing, and we can, without hesitation, state that having used a great number of chilled rolls for sheet steel rolling, we have never employed at our works a pair of rolls better in every respect than the pair referred to. Our sheet steel rolling is probably a much more severe test than your Rolls will be subject to at any other works. PARK, BROTHER & CO.

McNEALS & ARCHER,

BURLINGTON, N. J.

Flange Pipes.



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CAST IRON PIPES

FOR WATER AND GAS.

JAPANNERS. Light Castings and Metal Patterns DECORATORS.

A SPECIALTY.

TAYLOR & BOCCIS,

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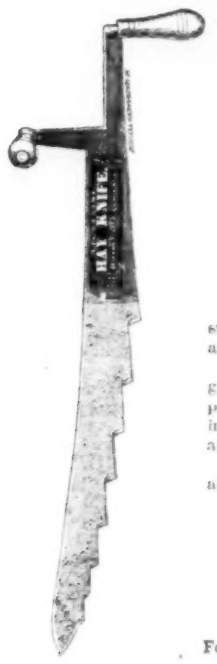
Nos. 65, 67, 69, 71 & 73 Central Way, CLEVELAND, O.

CORRESPONDENCE SOLICITED.

Will make estimates on completed work when desired.



LIGHTNING HAY KNIVES,

WEYMOUTH'S PATENT.

This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat and ditching marches.

The blade is best cast steel, spring temper, easily sharpened, and is giving *universal* satisfaction. A few moments trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for export as well as home trade, and *seems destined* to take the place of all other Hay Knives.

They are nicely packed in boxes, one dozen each, of 50 lbs. weight, suitable for shipping by land or water to any part of the world.

Manufactured only by

Hiram Holt & Co.,

East Wilton, Franklin Co., Maine.

For sale by the Hardware Trade generally.

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ENGINEERS, IRON FOUNDERS & BOILER MAKERS,

Coal Miners and Fire Brick Manufacturers.

The Only Makers in the Southern States of

WASHED FOUNDRY COKE,

Free from Slate and Sulphur.

Machine-Made Brick, Limestone, Lumber and Shingles.

FARMS TO LET.

Apply to the HEAD OFFICE, South Pittsburg, Tennessee.

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DEALER IN

MINERAL LANDS,

Chattanooga, Tenn.

Offers for sale, at very low figures, some of the most valuable Charcoal and Coke Properties within the district. Full particulars furnished on application.

Vulcan Iron & Nail Works,

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ROANE IRON COMPANY,

Manufacturers of and Dealers in

Pig and Railroad Iron.

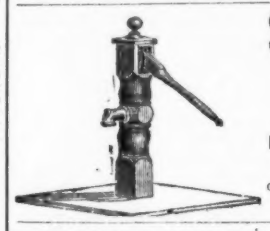
CHATTANOOGA, - - - - - TENN.

WASON CAR & FOUNDRY COMPANY,

Chattanooga, Tenn.,

Manufacturers of

RAILWAY FREIGHT CARS, Car Wheels and Castings.



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MAKERS OF

Plain and Porcelain Lined Pumps.

Patent Improved Rubber Bucket Chain Pumps.

Pump Material in the rough or in the white. The very best quality of work at lowest prices.

CHATTANOOGA, TENN.

TENN. COAL & RAILROAD COMPANY,

A. M. SHOOK, General Manager, - - Tracy City, Tenn.

Proprietors of the Sewanee mines, capacity of 50,000 bushels of coal and coke per day.
Several important institutions of learning, including the University of the South, also the celebrated Beersheba Springs, are located upon the line of this Railroad.
Being also the proprietors of several extensive tracks of very fine lands, offer special inducements to colonies. Communications addressed to the General Manager will receive prompt attention.

T. J. BROWN,

Rockwood, Tenn.

Miner and Contractor of Fossiliferous Ores.

A superior article delivered at low figures at any furnace within the district or at any point on the Ohio River. Refer to Roane Iron Co., Chattanooga Iron Co., or S. B. Lowe, Chattanooga.

S. B. LOWE,

Pig Iron, Storage & Commission.

Dealer in Charcoal and Coke Pig Iron for Foundry, Forge or Car Wheel purposes.

Chattanooga, Tenn.

S. Whinery, Civil Engineer,

CHATTANOOGA, TENN.

Late Division Engineer Cincinnati Southern Railway.

Will prepare plans and superintend construction of Bridges, Buildings, Roofs, Roads, Streets, Water Works, Sewers, Canals and other public works. Examinations, location and construction of railway lines a specialty. Surveys, examination and reports made of mineral lands. Business attended to thoroughly and promptly. First-class references given.

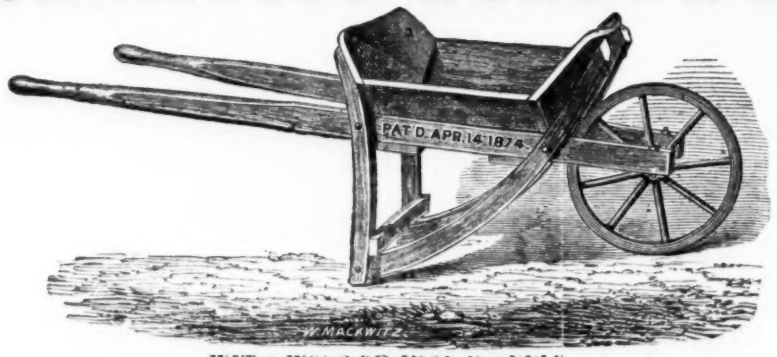
GEORGE W. BRUCE,

No. 1 Platt St., New York,

Agent for CLEMENT & MAYNARD,

Great inducements offered in their Superior Shovels, Spades and Scoops and Trowels, as well as Hoes A large stock on hand.

CHAMPION BARROWS.



WITH WOOD OR IRON WHEELS.

A first-class article and a specialty that will make a demand in any market and afford a good margin for dealers. We are prepared to furnish them in large quantities. Manufactured by

BRYAN MANUFACTURING CO., Bryan, O.

SEMPLE & BIRGE MFG. CO., Sole Western Agents, ST. LOUIS, MO.

For Sale by THE NEW YORK PLOW CO., General Eastern Agents, 55 Beekman St., New York.

STANDARD NUT CO.,

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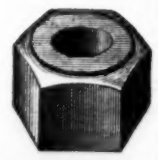

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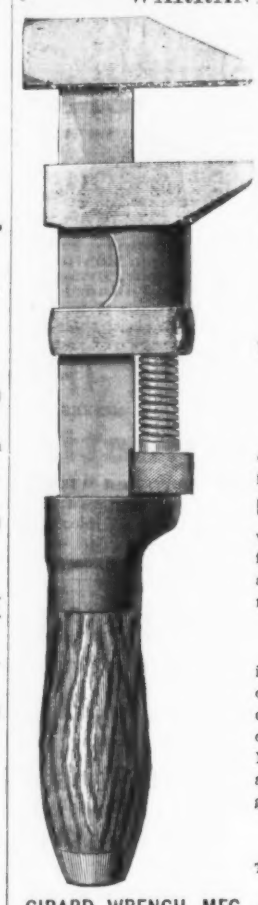

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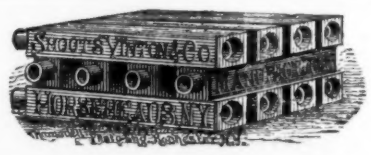

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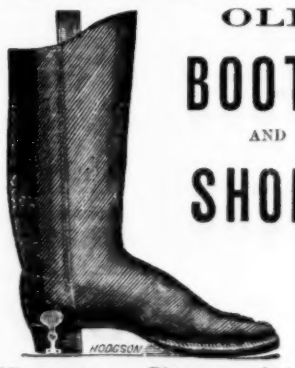

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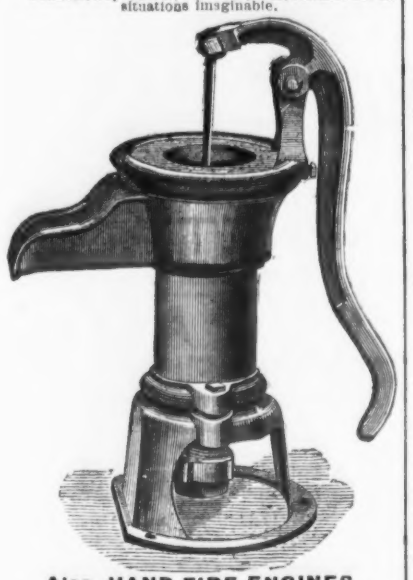

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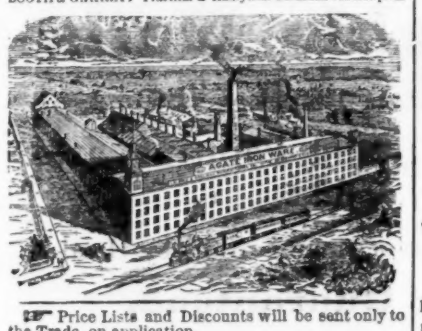

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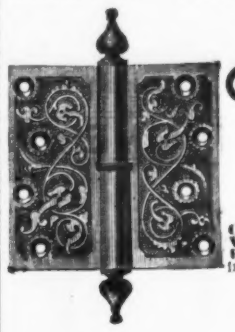
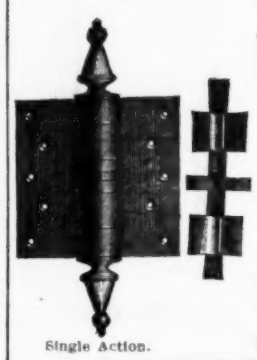


Centennial Spring Hinges.


Single Action.

This Hinge has **two** flat coil springs, very powerful It has a heavy **solid** pintal, giving much less friction than a **hollow** pintal. It has broad, solid bearings in the knuckle, which do not wear down readily and let the door sag. It is Fast Joint, therefore can be used for either right or left hand. By actual test it has an average of 50 per cent. more power than other Spring Hinges in common use of same size.
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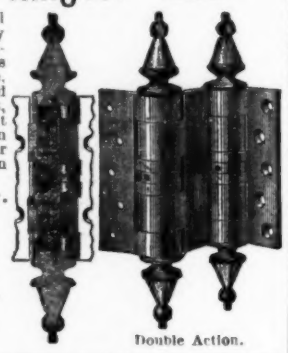
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A Steel Melting Plant in Russia.

The Isheff small arms factory, situated at Kama, Russia, about 560 miles from Nishni-Novgorod, is Russian Crown property, but is let on a contract for the production of 250,000 stand of breech-loading (needle) guns at a fixed price. In order to utilize the plant on the spot it was thought desirable to add a crucible steel melting plant, and under the direction of the manager, M. Bruneau, a Belgian, the furnaces, which are cheap in construction and economical in working, have been erected; they are fired with gas on Siemens' principle, charcoal being used as a fuel. The gas-producer is a shaft about 30 inches square, inside measure, and about 11 feet high, about 6 feet of the central part forming the space for the fuel, which is consumed by air introduced under pressure through a series of small rectangular apertures in the casing wall. The top is covered by a feeding hopper and slide valve like that of the ordinary Swedish gas furnaces, and at the bottom is an arched opening of about 3 square feet leading to the gas exit passages, of which there are two, placed symmetrically one on either side of the shaft, and communicating by a short channel with the gas regenerators. A gas stop-valve is placed upon each passage, and the two are connected by an iron balance beam, so that when one valve is shut the other is open. The valves are flat iron disks with a plain iron stem, both parts being thickly covered with fire-clay. The valve edge is brought to a conical surface which bears against a seat of similar form. The melting hole, which is of rectangular section, about 3 feet long, 2½ feet deep by 1¼ feet broad, takes eight pots of 60 pounds capacity in two rows. It is contained in the center of a rectangular mass of brickwork immediately between the gas regenerators, behind which are the air regenerators, the whole forming a block 5 feet wide, 19 feet long and 3½ feet high above the ground level. The bricks in the gas regenerators are placed on end, and those in the air regenerators, which are of larger capacity, horizontally.

The ends of the furnace block are joined by a flue 2 feet square inside, in plain, and having in the middle a valve for reversing the exhaust current, and two small chimney pipes through which the waste gases are discharged into the air. The current is reversed every half hour, the exhaust gas from the melting hole passing first through the gas regenerator and then through that for heating the air. The combustion takes place in a narrow slit formed between the top of the regenerator and the cover of the furnace. The melting hole is lined with a mass of fresh and burnt fire-clay about 18 inches thick, the space for receiving the pots being slightly broader below than above; a tap-hole for removing slags is pierced through the center; the covers are made of similar refractory mass in cast-iron frame plates. When working upon rifle-barrel steel, containing 0.35 to 0.45 per cent. of carbon, these furnaces make from five to six meltings per day; but when producing bayonet steel, with 0.7 per cent., or tool steel with 1.0 to 1.2 per cent. of carbon, which are less refractory, seven meltings may be obtained. They may be kept fired for seven days as a rule, but with good pots for eight or even nine days. The daily consumption of fuel is 550 cubic feet of charcoal per furnace, which suffices to melt 24 cwt. of the milder quality of steel. One of the most essential points in management is the air supply, great stress being laid upon the necessity of providing largely for the requirements of the gas, both in the producer and in the subsequent combustion. The cover of the melting hole requires to be replaced from five to six times daily, but those of the regenerators usually last throughout the week. The charge in the pot consists of refined cast iron and wrought iron. For barrel steel the mixture includes 14 lbs. of the former, 46 lbs. of the latter, and about 2 lbs. of steel borings and turnings. For bayonets, 17 lbs. of cast and 30 lbs. of wrought iron are used. The refining of the cast iron is effected by melting it with an addition of lathe turnings, and running it into a slab, which is cooled by water and broken into fragments of a convenient size. When the steel ingots show a tendency to contain blow holes, spiegeleisen, containg 15 to 20 per cent. of manganese is substituted for a portion of the cast iron to the extent of 15 or 20 per cent. of the whole amount of the latter.

The melting pots are prepared on the spot from a mass containing clay, old potsherds, Russian and English graphite and anthracite, the following quantities being required for a single pot:

Clay	lbs. 14
Old potsherds	" 14
Siberian graphite	" 9
English graphite	" 1
Anthracite	" 4

Great care is required in the incorporation of the materials to obtain a mass free from air bubbles. The crucibles are molded in a plunger press and allowed to dry from two to three months before using. With one press and about 80 hands 275 pots are made daily. About 30 per cent. give out after the first melting, the remainder being used twice.

There are 20 similar furnaces in the works, 10 of which are kept in heat at a time while the remaining 10 are under repair.

S. B. Whiting, acting chief engineer of the Philadelphia and Reading Coal and Iron Company, received the following important letter from President Gowen, under date of June 27th: The price of coal would justify a reduction on June wages of about 18 per cent. below the basis, but as our tolls were made 1.60 the men are entitled to be paid at 16 per cent. below the basis, and you can make the check rolls out at the latter rate. In July the tolls will be 1.75, and for that month the wages will be 10 per cent. below the basis. Our quota for June will be filled to-night or to-morrow morning, but in order to avoid a stoppage in the middle of this week we will run on full until Saturday night, and stop two days longer in July, the suspension in which month will therefore be twelve working days instead of ten as first intended. The condition of the coal market continues to justify the belief previously expressed, that the July suspension will be the last of the present shipping season, except in cases where large shipments may fill our monthly quota a day or two prior to the end of a month.

Employers and Workmen in Great Britain.

The sixth annual report of the Iron Trades Employers' Association, which has just been issued, is a very important document, as showing the feelings now existing between the masters and the men, the employers' opinion on recent legislation affecting their interests, and the masters' antagonism to both the legislation and trades unionism. The report contains a summary of the proceedings and the policy of the association for the past year, and advocates a system of operations to be carried on by the society and its members during the ensuing twelve months, especially counseling them to take advantage of the present condition of trade, enforce piece-work, lengthen the hours of employ, and, where possible, put down trades unions. The report congratulates the association that it has only had to contend with two strikes during the past year, neither of which were of much moment, both being in resistance of reduction of wages. One was at Worsbrodale Foundry, Barnsley, and the other at the Avonside Engine Works, Bristol. The report proposes that the future policy of the association should take an aggressive form, the members being advised to push the extension of the piece-work system, although the report confesses that its application could never be made universal. It refers with deep concern to the state of trade, and points out that the committee of management had been fully alive to the gravity of the situation. In December last the feeling of the members was tested as to the advisability of increasing the number of working hours, or of reducing wages, and the general opinion of the members was that some movement was necessary to reduce the cost of production. United action was pointed out as being absolutely essential, but in respect to the best means applicable for securing the desired results the replies were not conclusive, while the alternative proposals for lowering the rate of wages or increasing the number of working hours (which make up the week's work), or both had further to be considered by the employers. The executive committee were of opinion that employers in the mechanical engineering trades of the country would soon find themselves forced to take up and deal with the labor question, either in the matter of wages or by an increase in the number of hours or both. Already important proposals had been made to the general committee on these points, which, from their nature, were confidential, and could only be stated to the members in the form of personal communications. The report strongly advises that all unionist foremen should be discharged by members of the association in whose employ they may be, it being felt that a man who was a unionist could not faithfully serve his employers in a position of trust. The association had also opened a free register office for employers and workmen in Manchester, an institution which had enabled employers to reduce the average wage rate. Special attention had during the year been paid to Mr. Macdonald's Compensation Bill, and the committee, in conjunction with the National Federation of Employers, had done all they could in opposition to that measure. The question involved was now in the hands of the Attorney-General, and the Federated Association of Employers had agreed to watch over the interests of their members. The statement of income and expenditure could only be placed in the hands of district officers as a private and confidential document. At the annual meeting of the association it was decided to institute a vigorous movement to increase the number of members, and in order to further this object it was resolved to issue to employers not connected with the association the following manifesto:

DEAR SIR: We have been instructed to submit the claims of the members of this association to their brother employers. The legislation of recent years has withdrawn from masters the protection which was formerly extended to them. The combination laws have been abolished; conspiracy in restraint of trade is no longer a penal offense; picketing has been practically legalized; the diversion of the funds of benefit societies for the purposes of unionism is virtually authorized by statute; and the liability of employers to their workmen for injuries inflicted by others in their employment is recognized by parliament as a subject for legislation, so that employers can henceforth look only to themselves for mutual protection.

Railway Working Signals in Great Britain.—A return, in pursuance of the railway regulation act, 1873, has just been presented to parliament, relative to the interlocking and concentrating of signals, and the systems upon which the various lines are worked. This return shows that in the United Kingdom there is now a total length of railway open for passenger traffic of 8980 miles of double and 7181 of single lines. Of the distance worked by telegraph there are 6659 miles of double and 3059 of single railways worked upon the absolute block system, the latter being in addition to the train staff system. On the permissive block system there are 167 miles of double and 29 of single lines at work. The distance worked by telegraph, but not on either of the foregoing systems, is 506 miles of double and 477 of single lines. Of these, 337 miles are worked on the system in which only one engine in steam, or two or more engines coupled together, are allowed to be upon the line at one and the same time. Between five and six miles are operated by the train porter system and 3211 by the train staff system. By a comparative statement included in the return, it appears that in 1876 the length of double line open in the United Kingdom was 8885 miles, as compared with 8980 in 1877, and the distance worked on the absolute block system increased from 6290 miles in 1876 to 6660 in 1877. The percentage of double lines worked by the absolute block system showing an increase from 71 per cent. in 1876 to 74 per cent. in 1877.

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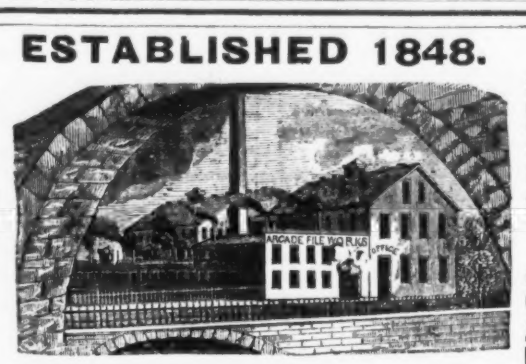

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Kitchens, Laundries, &c., ventilated without draft. Durable, strong, without rivets or solder. Oiled for six months. Each one has storm cap. Retail price, size six inch diameter, $1.00 and upwards; apparatus with which any one can cut circles in glass, 15 cents each.

Protective Ventilators avoid drafts, exclude dust, dampness, malaria and germs of disease; adopted by hospitals, schools, institutions, &c.; applied to any window or room.

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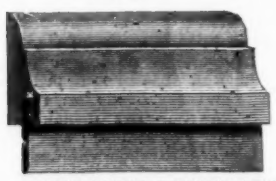
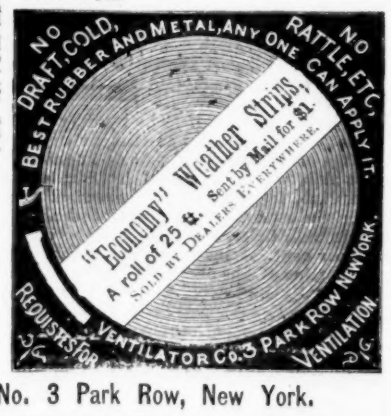
Rubber supplied with enlarged edge and instructions to enable Car Manufacturers, Carpenters, Builders and far off trade to make slots in Sashes, Doors, Moldings, &c., and thus make perfect Weather Strips.

No. 6.





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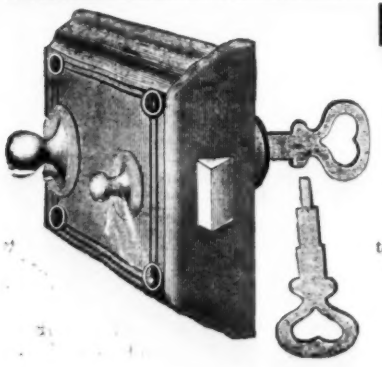

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KING'S PATENT, June 26, 1877.

Cylinders adjustable for doors from 1¼ inch to 2 inches.

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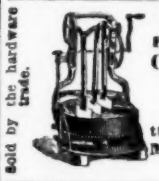

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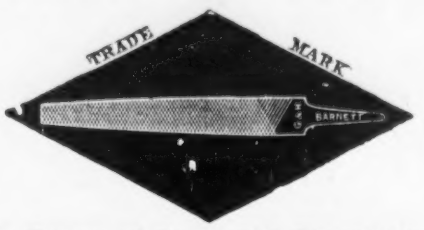

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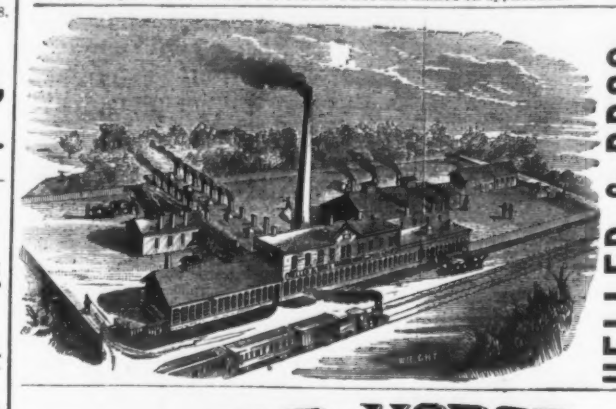

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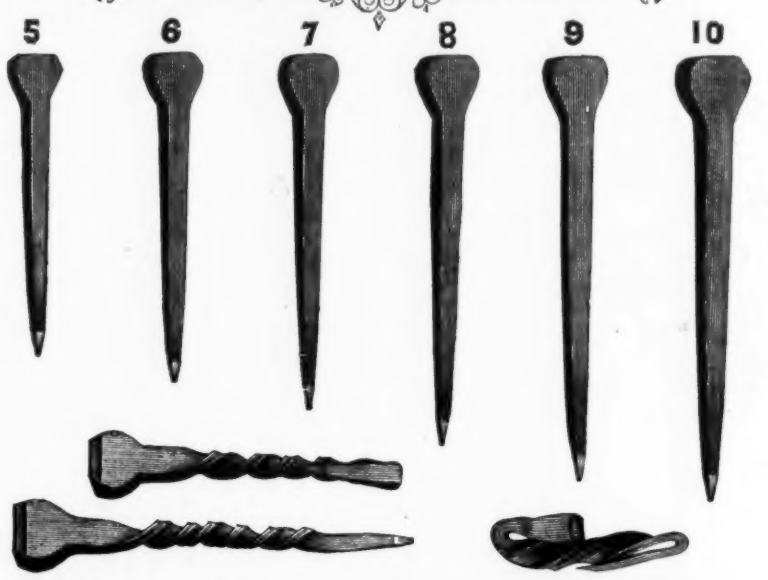

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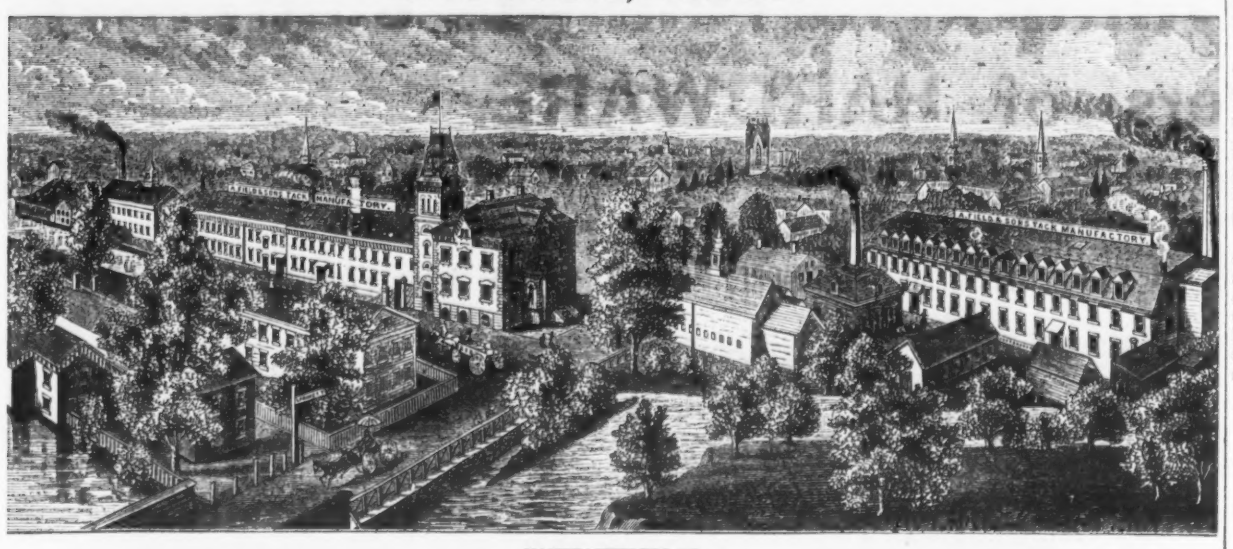

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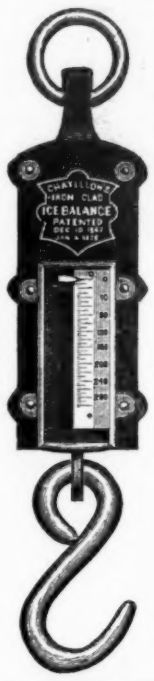

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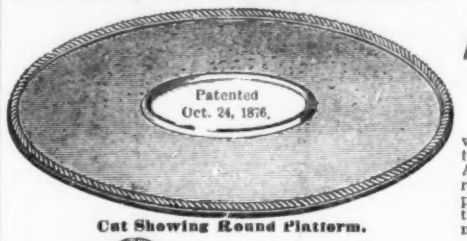

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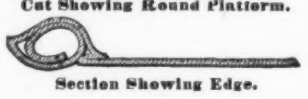

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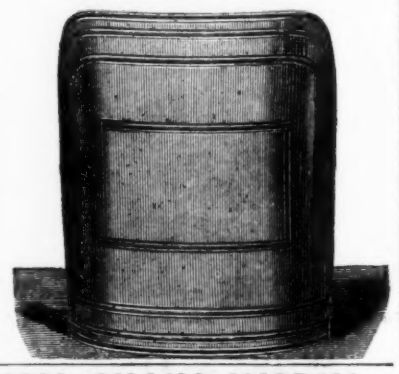

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The Railroads of the United States in 1877.

Messrs. H. V. & H. W. Poor send us advance sheets of their forthcoming Railroad Manual, from the introductory chapters of which we take the following:

The number of miles of railroad opened during the year 1877 was 2177, against 2657 for 1876, 1758 for 1875, and 2405 miles for 1874. The largest number of miles built has been in New York and Pennsylvania, and in narrow-gauge lines in Ohio, Iowa and Texas. No new lines of any considerable magnitude have been undertaken. The tables which follow will show in what sections there has been any considerable increase.

The gross earnings of all the roads whose operations have been reported have equaled $472,909,272, against $497,257,959 for 1876 and $503,065,505 for 1875. The general result of the operations of our railroads for the last seven years is shown in the following statement:

STATEMENT SHOWING MILES OF RAILROAD, CAPITAL ACCOUNT, EARNINGS, ETC., FOR SEVEN YEARS.

Year.	Miles operated.	Capital and funded debt.	Earnings. Gross.	Net.	From freight.	From passengers.	Dividends paid.
1871..	44,614	2,664,627,645	403,329,208	141,746,404	204,430,322	108,898,886	56,456,681
1872..	57,323	3,150,423,057	465,241,055	165,754,373	240,031,785	132,399,270	64,418,157
1873..	66,237	3,784,543,034	526,419,035	183,810,562	269,035,508	137,384,437	67,120,709
1874..	69,273	4,221,763,594	520,466,016	189,370,938	379,466,935	140,999,681	67,042,942
1875..	71,759	4,415,631,690	503,065,505	185,506,418	363,960,234	139,105,271	74,294,208
1876..	73,808	4,468,501,035	497,257,959	186,452,752	361,137,376	136,120,583	68,039,668
1877..	74,112	$4,568,597,248	$472,909,272	$170,976,697	$342,859,222	$130,050,050	$68,556,312

It will be seen by the above that the gross earnings have fallen off $24,348,687, and the net earnings $15,476,055, as compared with 1876.

The ratio of net to gross earnings was 36.16 per cent., as against 37.5 per cent. for 1876, equal to an increase of 1.36 per cent. in the operating expenses, as compared with the preceding year. The decrease in earnings from freight has amounted to $18,278,154; and in passenger traffic, $6,070,533; the percentages of decrease being respectively 9.5 and 9.7 per cent. The dividends have fallen off $9,483,356, and are less than for any year since 1871. The total amount of capital stock on which dividends were actually paid was $835,038,896, giving an average rate of 7 per cent. No dividends were paid on any of the railroads in the States of Arkansas, Colorado, Florida, Kansas, Louisiana, Mississippi, Missouri, Nebraska, Oregon, Texas and Vermont—nor in Iowa and Minnesota excepting on leased lines.

The following table show the mileage, gross net earnings, freight and passenger earnings and dividends of the railroads of the United States for five years, 1873-77, arranged by geographical divisions:

	1877.	1876.	1875.	1874.	1873.
New England.					
Miles of railroad	6,039	5,783	5,732	5,617	5,303
Earnings from passengers	$20,065,709	$20,516,215	$21,776,893	$22,111,787	$22,358,645
" " freight, &c	24,524,756	25,244,778	26,552,029	27,952,987	29,310,041
" " all sources	44,590,465	45,760,993	48,328,922	50,064,774	51,676,688
Net earnings	13,735,746	15,379,072	15,324,654	16,713,183	15,061,777
Dividends	6,977,726	7,607,973	8,788,040	8,511,971	9,004,488
Middle States.					
Miles of railroad	13,607	13,647	13,173	12,874	12,441
Earnings from passengers	$39,255,780	$47,483,865	$40,772,957	$41,699,871	$42,353,230
" " freight, &c	116,687,341	130,129,542	134,904,451	144,798,567	151,697,072
" " all sources	155,943,121	177,613,407	175,677,418	186,498,438	194,052,302
Net earnings	61,033,089	69,382,517	65,609,418	90,188,972	69,280,585
Dividends	24,890,480	33,699,111	39,357,196	37,600,154	36,531,343
Southern States.					
Miles of railroad	11,272	13,948	13,522	13,505	13,908
Earnings from passengers	$9,953,090	$11,877,901	$13,864,915	$14,131,291	$15,310,984
" " freight, &c	29,859,268	38,865,747	36,534,312	38,127,950	38,385,420
" " all sources	39,812,358	50,743,648	50,399,227	52,259,241	53,696,409
Net earnings	12,664,346	17,119,031	16,741,060	17,269,332	18,133,349
Dividends	2,740,793	1 860,351	1,496,996	1,068,455	901,396
Western and S. W. States.					
Miles of railroad	39,136	36,753	36,058	35,639	32,973
Earnings from passengers	$44,437,039	$43,362,211	$54,953,084	$56,783,466	$51,620,779
" " freight, &c	148,767,477	142,880,621	151,224,570	158,086,011	160,067,602
" " all sources	193,204,516	186,242,833	206,217,654	214,869,477	211,717,781
Net earnings	66,085,243	63,912,968	75,604,104	75,546,695	72,464,212
Dividends	14,556,462	17,394,532	19,230,511	16,605,832	19,055,247
Pacific States.					
Miles of railroad	1,896	1,126	1,023	417	390
Earnings from passengers	$2,330,079	$1,727,611	$1,843,207	$1,223,248	$1,175,193
" " freight, &c	5,466,845	4,136,405	3,737,239	1,316,124	1,237,603
" " all sources	7,766,922	5,864,316	5,580,446	2,539,372	2,412,796
Net earnings	2,655,137	2,331,325	2,687,069	1,395,790	1,263,097
Dividends	240,099	187,701	.....	.....	.....
Pacific Railroads.					
Miles of railroad	2,251	2,251	2,251	2,251	2,251
Earnings from passengers	$9,163,627	$10,216,424	$10,243,956	$9,002,276	$8,641,013
" " freight, &c	23,006,455	20,817,379	18,770,892	15,792,318	15,568,931
" " all sources	32,170,082	31,033,803	29,014,848	24,794,594	24,209,944
Net earnings	15,053,582	17,033,517	16,614,855	14,374,742	13,648,195
Dividends	7,281,640	7,299,000	7,632,250	3,256,530	1,628,265

The summary of earnings, expenses, &c., given in the tables which follow shows that the decrease of business has extended over all parts of the country, and to what extent. The reduction in the rates of transportation, noted in 1876, has continued through 1877, as an examination of the statements of all the leading railroads throughout the country will show.

Classifying the States by their geographical position, as usual, it will be seen that the gross earnings for the New England States were $44,590,465, against $45,760,993 for 1876, $48,328,922 for 1875, $50,064,774 for 1874, and $51,676,688 for 1873. Of these earnings $24,524,756 were received for transportation of freight, mails, &c., and $20,065,709 for the transportation of passengers. The net earnings were $13,735,746, against $15,379,072 for 1876, $15,324,654 for 1875, and $16,713,183 for 1874. The dividends paid amounted to $6,977,726, against $7,607,973 for 1876, $8,788,040 for 1875 and $8,511,971 for 1874.

The gross earnings of the railroads in the Middle States were $155,943,121, against $177,613,407 for 1876, $175,677,418 for 1875, $186,498,438 for 1874 and $194,052,302 for 1873. Of gross earnings $116,687,341 were received for transportation of freight, mails, &c., and $39,255,780 for transportation of passengers. The net earning were $61,033,089, against $69,382,517 for 1876, $65,609,418 for 1875, and $70,188,972 for 1874. The dividends paid amounted to $24,890,480, against $33,699,111 for 1876, $39,357,196 for 1875 and $37,600,154 for 1874.

The gross earnings of the railroads in the Southern States were $39,812,358, against $50,743,648 for 1876, $50,399,227 for 1875, $52,259,241 for 1874, and $53,696,409 for 1873. Of the earnings, $29,859,268 were received for the transportation of freight, and $9,953,090 for that of passengers. The net earnings were $12,664,346, against $17,119,031 for 1876, $16,741,060 for 1875, and $17,269,332 for 1874. The dividends paid amounted to $2,740,793, against $1,860,351 for 1876, $1,496,906 for 1875, and $1,068,455 for 1874.

The railroads in the States of Arkansas and Texas are this year grouped with those of the Western States, thus causing a greater apparent than real decrease in the earnings in the Southern States. Including these States, the gross earnings would be $48,966,376, and the net earnings $18,211,327.

The gross earnings of the railroads in the Western States were $193,204,516, against $186,242,832 for 1876, $206,217,654 for 1875, $214,869,477 for 1874, and $211,717,781 for 1873. Of these $148,767,477 were received for transportation of freight, mails, &c., $44,437,039 for passengers. The net earnings were $66,085,243, against $63,912,968 for 1876, $75,604,104 for 1875, and $75,546,695 for 1874. The dividends paid amounted to $14,556,462, against $17,394,532 for 1876, $19,230,511 for 1875, and $16,605,832 for 1874. Prior to the present year, the operations of the railroads in Arkansas and Texas were aggregated with those of the Southern States. Making the necessary deduction for those States, the gross earnings for 1877 would be $184,050,498, and net earnings, $62,478,200.

The gross earnings of the railroads in the Pacific States were $7,766,922, against $5,864,316 for 1876, $22,552,234 for 1875, $16,774,086 in 1874, and $15,276,747 for 1873. Of the gross earnings, $2,330,079 were received for the transportation of passengers, and $5,436,845 for the transportation of freight. The net earnings were $2,655,137. The dividends paid were $240,099.

The earnings and expenses of the Central Pacific Railroad were included among those of the Pacific States in 1875, and the preceding years, which explains the apparent decline in earnings.

On the Pacific railroads the earnings aggregated $32,170,082, of which $9,163,627 were derived from passengers, and $23,006,455 from transportation of freight, mails, &c. The net earnings were $15,053,582, and the dividends $7,281,640.

The earnings of the Union Pacific Railroad are included among those of the Western States for the year 1875 and the preceding years. For 1877, the earnings, &c., of the railroads of Arkansas and Texas are included among those of the Western States; prior to that, they were grouped with the Southern States.

It will be seen that the principal decrease in earnings has been in the Middle States, due partly to the depressed condition of the coal trade, and partly to the falling off in passenger earnings as compared with 1876, the Centennial year.

The elaborate tables heretofore printed in the manual are omitted this year; but the final results, the only important feature, are given in full detail. There is added a table reducing these results to the unit of 100. From this it will be seen that for each 100 miles of railroad in the United States there are 22.8 miles of second track, sidings, &c.; 20.1 locomotives; 15.2 passenger cars; 4.7 baggage, mail and express cars, and 495.3 freight cars of all kinds.

The capital stock aggregates $2,921,507 for each 100 miles; the funded debt, $2,848,305; the floating debt, $300,078, and the total cost of construction and equipment, $6,069,893; equal about to $60,699 per mile of completed road.

The gross earnings per mile were, $6,380.94; operating expenses (63.85 per cent.), $4,074; net earnings, $2,306.90. Interest paid on bonds per mile of road, $1,248.04; dividends paid on stock, ditto, $739.52. The ratio of interest paid to total funded debt was 4.39 per cent.; of dividends to aggregate capital stock, 2.53 per cent. In 1871, with only two-thirds as many miles of railroad in operation and a little more than one-half the capital stock, the dividends ag-

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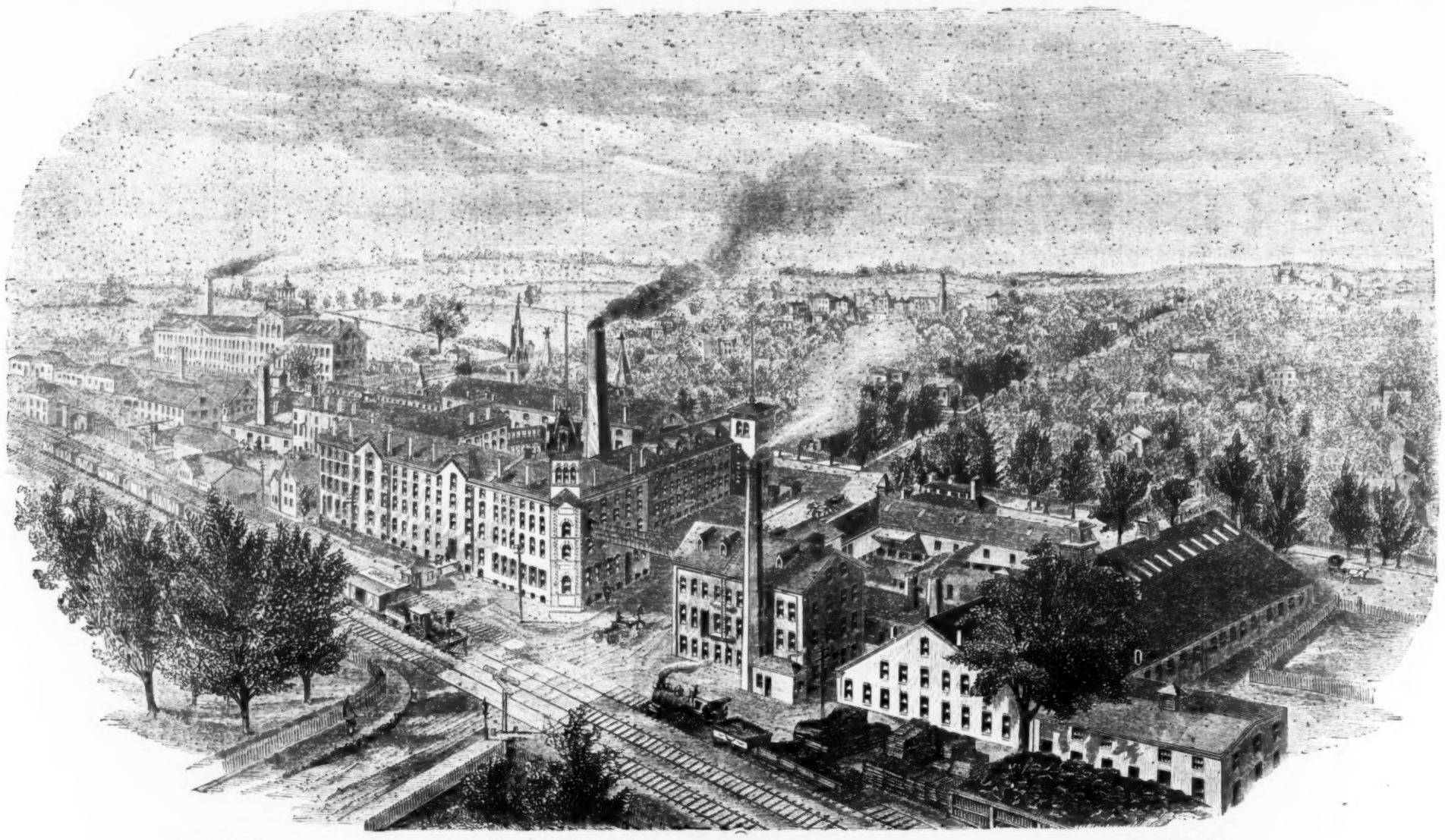

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"ELECTRIC RAZORS,"

And the celebrated "ELECTRIC SHEARS." Nickel Plated Hdws.

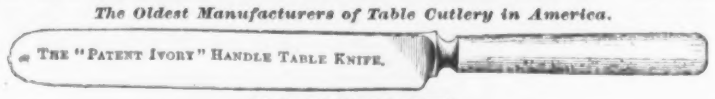
Agents for the BENGALL RAZORS.

AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c.

91 Chambers and 73 Reade Sts., N. Y. 423 N. Fifth St., ST. LOUIS, MO.

MERIDEN CUTLERY CO.

The Oldest Manufacturers of Table Cutlery in America.



THE "PATENT IVORY" HANDLE TABLE KNIFE.

EXCLUSIVE MAKERS OF THE

CELLULOID

HANDLE FOR TABLE CUTLERY. A most beautiful and perfect substitute for Ivory. Also makers of all kinds of TABLE, BUTCHER AND HUNTING KNIVES.

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THE LAMSON & GOODNOW MFG. CO. 88 CHAMBERS ST. N.Y.

AMERICAN TABLE CUTLERY &c.

NAUGATUCK CUTLERY CO.,

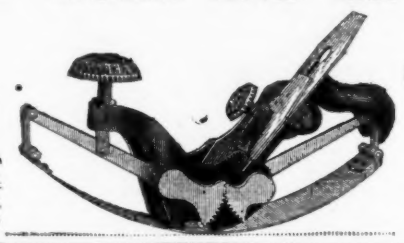
Manufacturers of FINE PEN & POCKET CUTLERY.

FULLER BROS., Sole Agents, 89 Chambers and 71 Reade Sts., N. Y.

STANLEY RULE AND LEVEL CO.,

MANUFACTURERS OF

Improved Carpenters' Tools.



FACTORIES, New Britain, Conn.

WAREROOMS, 29 Chambers St., New York.

Cutlery.

McCOY & CO.,

SUCCESSORS TO

Van Wart & McCoy,

Importers & Commission Merchants.

Hardware, Cutlery, Saddlery, Metals, &c.

134 and 136 Duane St., New York.

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JOSEPH S. FISHER,

No. 411 Commerce St., PHILADELPHIA

AGENT FOR

George Wostenholm & Son,
"Limited."
Washington Works, SHEFFIELD,

Celebrated I-XL Cutlery, Razors, &c

AGENT FOR

WALTER SPENCER & CO.,
Steel and File Manufacturers,
Rotherham, ENGLAND.

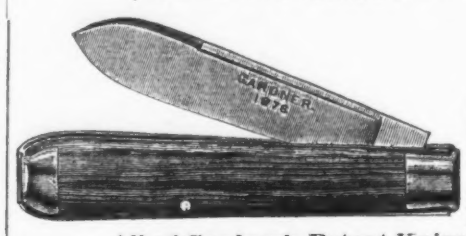
Corporate Mark.

SPENCER ROTHERHAM

Granted 1777.

HERMANN BOKER & CO.,

101 & 103 Duane Street, New York,



SOLE AGENTS FOR THE

GARDNER PATENT POCKET KNIVES

The assortment of Gardner's Celebrated Barlow Knives has been increased, and they are now furnished with Rubber, Bone, Stag and Wrought Iron Handles.

All of Gardner's Patent Knives are fully warranted.

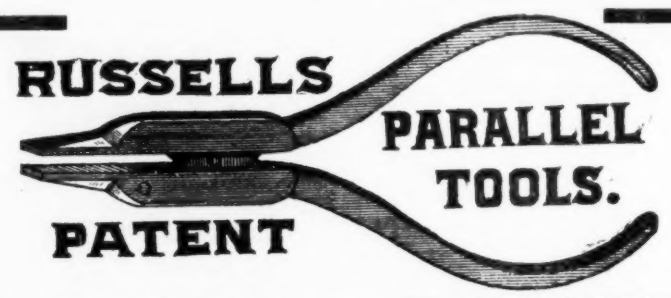
ESTABLISHED 1853.

AARON BURKINSHAW,

Manufacturer of Pen and Pocket Cutlery, Pepperell, Mass.

My Blades are forged by hand from the best Cast Steel, and warranted. To me was awarded the Gold Medal of the Conn. State Agricultural Society.

RUSSELLS PARALLEL PATENT TOOLS.



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Sole Manufacturers and Proprietors.

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HALL, ELTON & CO.,

Electro Plated Ware, German Silver and Britannia Spoons.

THE "ORLEANS."

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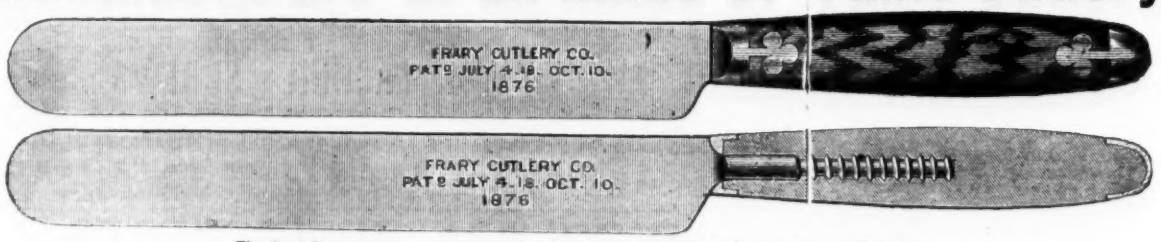
THE FRARY CUTLERY COMPANY,

FACTORY, BRIDGEPORT, CONN.

NEW YORK OFFICE & WAREHOUSE, with WIEBUSCH & HILGER HARDWARE CO., 84 Chambers St.

Manufacturers of all kinds of Table Cutlery.



The above Illustrations represent their New Patent Screw Tang Lock Fast Solid Handle Knife.

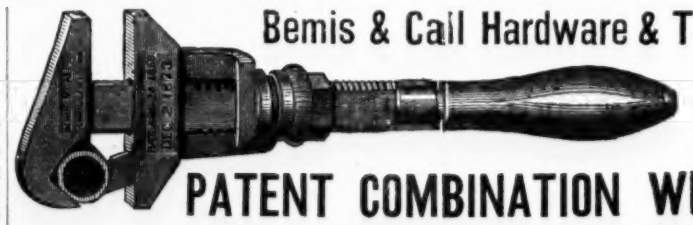
There is no question but that a solid handle Knife is much more preferable than a scale tang. The great objection to their use hitherto is, that no solid wood handle has been placed on the market with the handle properly secured—no handle put on with cement will stand the wear and tear of every day usage. The cement will expand and contract with the action of heat and cold, and become loose, crack and come off, causing great prejudice against their use. This objection is overcome in our patent screw tang. A wood screw is welded to the tang of the Knife or Fork, and screwed firmly and securely in the handle and locked there by the bolster, making a very strong neat and handsome knife, which we warrant never to get loose, crack or come off. We manufacture a large variety of patterns, both Table, Butchers and Carvers, and furnish the patent handle nearly as low as the scale tang. We are prepared to furnish this line of goods, together with the scale tang and iron handle, very promptly, and very respectfully invite the attention of the trade.

CLOTHES WRINGER!

Self-Adjusting Steel Elliptic Spring.

T. J. ALEXANDER, Manager,
BOSTON, MASS.

Bemis & Call Hardware & Tool Co.



This Wrench can be furnished with Briggs' Pat. Nut or Sleeve.

PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench, thus making a combination which has no equal

For Circulars and Price List, address

BEMIS & CALL HARDWARE & TOOL CO., Springfield Mass.

CORPORATE MARK.

Joseph Rodgers & Sons'
(LIMITED)
CELEBRATED CUTLERY,
No. 82 Chambers Street, New York.
F. & W. CLATWORTHY, Agents.

The demand for Joseph Rodgers & Sons' productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Premises and Steam power.

To distinguish Articles of Joseph Rodgers & Sons' Manufacture, please to see that they bear their Corporate Mark.

ESTABLISHED 1852.

NEW YORK KNIFE CO.

MANUFACTURERS OF SUPERIOR

Table & Pocket Cutlery,

WARRANTED TO BE MADE OF THE BEST MATERIAL.

WALKILL RIVER WORKS,

Walden, Orange Co., New York.

THOS. J. BRADLEY, President.

ALFRED H. HILDICK,

12 Warren St., N. Y., Importer of

Birmingham Heavy Hardware, Chains, Anvils, Vises, &c.

Agency of HILL BROS. & CO., WALSALL, ENGLAND

GENERAL HARDWARE MERCHANTS,

And of

Ball's Pat. Solid Steel Sheep Shears.

These Shears are unsurpassed for cheapness, durability and utility. They are made of one solid piece of steel from point to point, and cannot be broken in use, either in the bow or at the junction of shank and blade. Samples can be seen at above address, or sample lots furnished. Depot for "THE CROWN" SOLID BOX VISES. A cheap and excellent Vise.

L. SOLOMON,

Commission Merchant

IN

House Furnishing Goods.

Agent for the

Champion & Knox No. 99 Fluting Machines,

EUREKA & PEERLESS WRINGERS.

100 Chambers St., New York.

gregated $56,456,681, equaling 4.19 per cent. of the capital then invested.

In the following table of miles of railroad some changes have been made from the mileage given in previous issues of the Manual. These changes have been occasioned by our finding very considerable errors in the reports of railroad commissioners in some of the States in former years. They do not perceptibly affect the general aggregate.

The following statement shows the number of miles of railroad constructed each year in the United States from 1830 to the close of 1877 inclusive.

Year.	Miles in Oper'on.	An'l inc. of Mil'ge.
1830	22	—
1831	95	73
1832	229	134
1833	380	151
1834	633	253
1835	1,098	465
1836	1,273	175
1837	1,497	224
1838	1,913	416
1839	2,302	389
1840	2,818	516
1841	3,535	717
1842	4,026	491
1843	4,185	159
1844	4,377	192
1845	4,633	259
1846	4,930	297
1847	5,598	668
1848	5,996	398
1849	7,365	1,369
1850	9,021	1,650
1851	10,982	1,961
1852	12,908	1,926
1853	15,360	2,452
1854	16,720	1,360
1855	18,374	1,654
1856	22,016	3,646
1857	24,503	3,647
1858	26,968	2,465
1859	28,789	1,821
1860	30,635	1,846
1861	31,286	651
1862	32,120	834
1863	33,170	1,050
1864	33,908	738
1865	35,085	1,177
1866	36,801	1,716
1867	39,250	2,449
1868	42,229	2,979
1869	46,844	4,615
1870	52,914	6,070
1871	60,522	7,608
1872	66,242	5,720
1873	70,311	4,069
1874	72,616	2,305
1875	74,374	1,758
1876	77,031	2,657
1877	79,208	2,177

STATEMENT OF MILES OF RAILROADS IN EACH STATE AND GROUP OF STATES, DECEMBER 31, 1877-72.

	1877.	1876.	1875.	1874.	1873.	1872.
Maine	997	997	980	957	905	871
New Hamp.	964	940	934	918	877	810
Vermont	872	870	810	778	727	710
Massachusetts	1,863	1,837	1,817	1,786	1,755	1,658
Rhode Island	204	189	179	173	159	136
Connecticut	922	918	918	897	897	868
N. England	5,822	5,691	5,638	5,509	5,314	5,053
New York	5,725	5,525	5,423	5,250	5,165	4,925
New Jersey	1,661	1,601	1,511	1,438	1,418	1,378
Pennsylvania	5,926	5,794	5,705	5,575	5,297	4,949
Delaware	272	272	272	272	248	227
Md. and D. C.	944	944	929	900	906	866
West Virginia	638	618	615	615	615	609
Middle States	15,166	14,754	14,455	14,050	13,643	12,954
Virginia	1,635	1,618	1,608	1,608	1,538	1,502
Kentucky	1,509	1,475	1,326	1,326	1,320	1,266
N. Carolina	1,426	1,399	1,356	1,343	1,275	1,250
Tennessee	1,656	1,645	1,630	1,630	1,620	1,520
S. Carolina	1,406	1,353	1,335	1,320	1,320	1,290
Georgia	2,339	2,306	2,264	2,260	2,260	2,160
Florida	485	485	484	484	466	466
Alabama	1,802	1,800	1,800	1,782	1,722	1,628
Mississippi	1,088	1,084	1,018	1,018	990	900
Louisiana	495	495	495	495	495	495
South. States	13,840	13,660	13,316	13,266	13,006	12,595
Ohio	4,878	4,687	4,461	4,398	4,258	4,108
Michigan	3,477	3,395	3,346	3,315	3,253	2,976
Indiana	4,057	4,003	3,963	3,890	3,714	3,649
Illinois	7,392	7,285	7,109	6,759	6,589	6,361
Wisconsin	2,701	2,636	2,566	2,546	2,350	1,878
Minnesota	2,194	2,020	1,990	1,990	1,950	1,906
Dakota Ter'y	290	275	275	275	275	275
Iowa	4,134	3,939	3,850	3,765	3,728	3,643
Missouri	3,198	3,146	2,995	2,880	2,858	2,673
Indian Co.	275	275	275	275	275	275
Arkansas	767	767	740	700	700	450
Texas	2,210	2,031	1,685	1,650	1,578	1,078
Nebraska	1,286	1,217	1,167	1,107	1,107	1,051
Kansas	2,352	2,238	2,150	2,150	2,100	2,063
Colorada	1,045	957	804	682	603	483
Wyoming Ter.	465	459	459	459	459	459
Utah Ter'tory	506	506	506	459	372	342
Wst'n States	41,224	39,853	38,258	37,304	36,183	33,781
Nevada	631	631	601	601	601	601
California	2,080	1,919	1,503	1,328	1,208	1,042
Oregon	248	248	248	248	241	241
Washgt'n Ter.	197	110	110	110	105	65
Pacific States	3,156	3,373	2,707	2,487	2,165	1,949

Recapitulation.

	1877.	1876.	1875.	1874.	1873.	1872.
N. Eng. States	5,822	5,691	5,638	5,509	5,314	5,053
Middle States	15,166	14,754	14,455	14,050	13,643	12,954
South'n States	13,840	13,660	13,316	13,266	13,006	12,595
West'n States	41,224	39,853	38,258	37,304	36,183	33,781
Pacific States	3,156	3,073	2,707	2,487	2,165	1,949
Grand Total	79,208	77,031	74,374	72,616	70,311	66,242

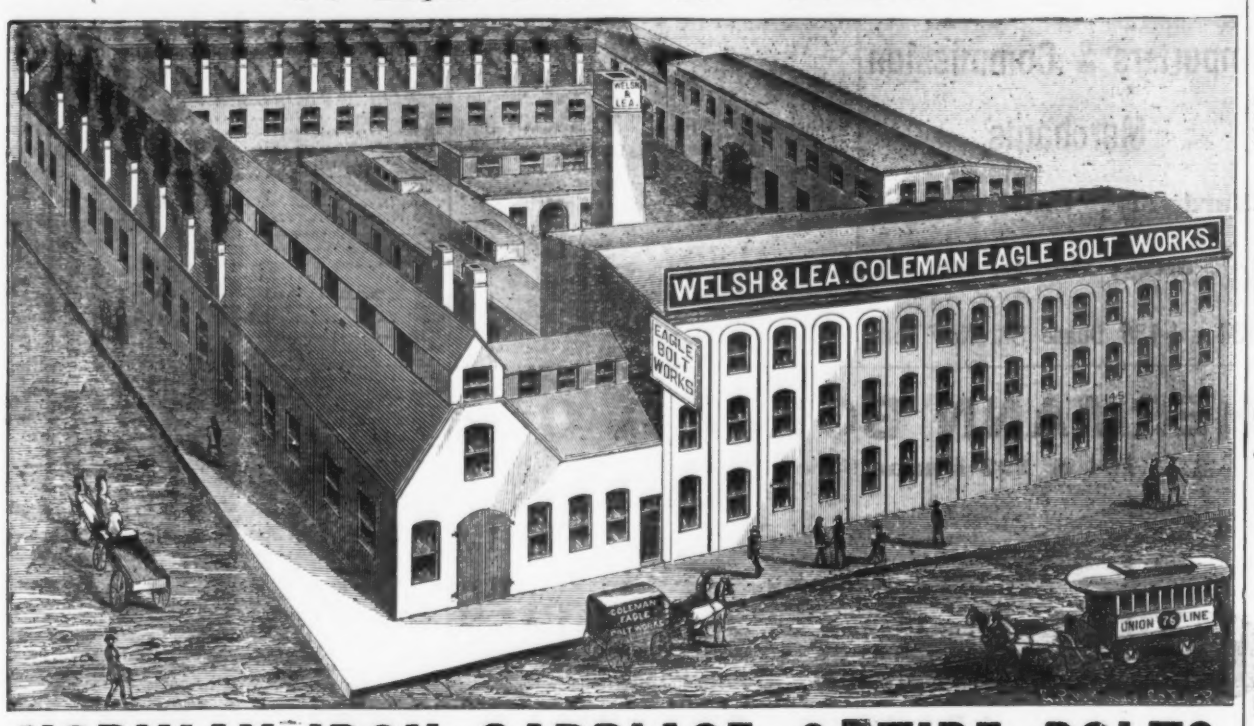
The New Haven (Conn.) Savings Bank is erecting a new building, and the new bank vault, which it is having constructed therein is attracting a good deal of attention, and will be the largest and best in the State. A brief description of it will be interesting, as illustrating the care and expense which large financial institutions devote to securing adequate protection for valuable papers, books and securities. In the first place a foundation of solid masonry was built in the cellar, about 24 feet by 12, running down 8 or 10 feet. Upon this a box was built of railroad iron, the interior of which is 7 feet 9 inches wide, 16 feet long and 10 feet high. The iron rails are placed upon each other so as to form a solid wall the thickness of the hight of one rail, the interstices being filled with the best cement, which hardens like rock. The rails are all bolted together by steel bolts, and there is a double thickness of them at the top. Thirty tons of rails have been used. Outside of the rails are brick masonry two feet thick. Last week the lining of the iron box was received. When in place it will be a box, just fitting inside the rail work, of chilled steel, 1½ inches thick in five plates, and weighs about 25 tons. When the vault is finished there will be three outside doors to it, each fitted with complicated locks. In the vault will be placed a large safe weighing 2000 pounds, and after one gets through the three doors, he will have to encounter the fine locks with which the safe will be furnished. This vault will be absolutely burglar-proof and fire-proof.

Herr Friedrich Krupp, of Essen, is making preparations to build a 120-ton steam hammer having a 13-foot stroke. The cost of construction of this enormous tool is estimated at $1,259,000.

COLEMAN EAGLE BOLT WORKS

ESTABLISHED 1845.

WELSH & LEA.



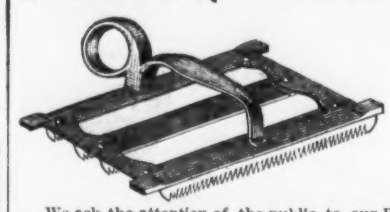
NORWAY IRON CARRIAGE & TIRE BOLTS, AXLE CLIPS, &c.

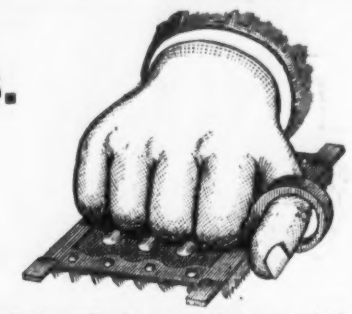
WORKS, Columbia Avenue, Hancock and Mascher Streets.

OFFICE, 145 Columbia Avenue (late 2030 Arch St.),

PHILADELPHIA.

HOTCHKISS' Novelty Combs.





We ask the attention of the public to our Patent Novelty Curry Combs, represented above, which are universally acknowledged to be far superior to anything in the market, being neat and durable and the most convenient to handle of any comb yet produced. They are put up in paper boxes of one dozen each, and packed 24 dozen in a case. GIVE THEM A TRIAL. For Sale by the jobbing Hardware, Saddlery and Woodenware trade.

HOTCHKISS' SONS, Bridgeport, Conn.

Philadelphia "STAR" Bolt Works.

NORWAY IRON FANCY HEAD BOLTS,

Carriage & Tire Bolts. **Star Axle Clips, &c.**

TOWNSEND, WILSON & HUBBARD, 2301 Cherry St., Philadelphia, Pa.

HOOPES & TOWNSEND,

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MANUFACTURE

Machine & Car Bolts,

COLD PUNCHED

Square and Hexagon

Nuts, Washers,

Tank and Coopers'

RIVETS,

Bridge Rods and Bolts

WOOD SCREWS,

Chain Links.

"Keystone" Boiler Rivets.

Unequaled in Quality and Finish.

TENNIS & WILSON,

Successors to J. CLARK WILSON & CO.,

No. 81 Beekman Street, - NEW YORK.

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SNELL MFG. CO., Augers, Bits & Boring Machines.
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Plumbs, Levels, Inclinometers, &c.
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CLARK & CO.,
Blind Hinges, Cast Butts and Axle Pulleys.
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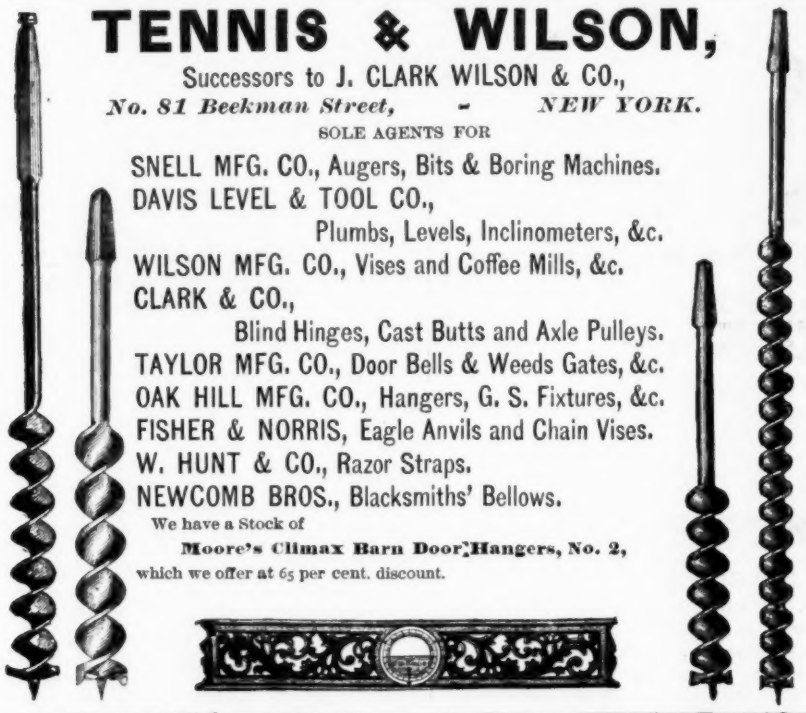
NEWCOMB BROS., Blacksmiths' Bellows.

We have a Stock of

Moore's Climax Barn Door Hangers, No. 2,

which we offer at 65 per cent. discount.



R. COOK & SONS,

Manufacturers of

Carriage & Wagon AXLES,

WINSTED, CONN.

ESTABLISHED 1839.

BLACK AND TINNED IRON RIVETS.

HENRY B. NEWHALL 11 WARREN ST. NEW YORK AGENT

W. P. TOWNSEND & CO.,

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Manufacturers of every description of First Quality,

RIVETS.

THE STANLEY WORKS,

MANUFACTURERS OF

Wrought Iron Butts, Hinges

AND

DOOR BOLTS,

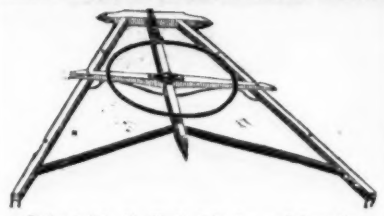
Plain, Japanned, Bronzed and Plated.

We have recently purchased CROOKE & CO.'S entire stock of WROUGHT BRIGHT BUTTS, orders for which are solicited.

FACTORIES: New Britain, Connecticut.

WAREHOUSE: 79 Chambers St., New York.

EUREKA PLATFORM SPRING WAGON GEAR.



Patented in the United States and Canada.

The attention of Manufacturers and of the Carriage Hardware Trade is respectfully invited to the Eureka Platform Spring Wagon Trestle.

This Gearing is far ahead of all others in strength and light appearance. It is the strongest and most perfect gear in use, and is meeting with a large sale. Manufacturers of Platform Wagons will use no other after a trial of this.

PRICE.

$7.00 for Trestle warranted to carry 1000 lbs.
7.50 " " " " 1500 "
8.50 " " " " 2000 "

Terms cash. Liberal discount to the trade.

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ROME TRESTLE COMPANY, Limited,

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FORT PLAIN SPRING AND AXLE WORKS.

FOR SPRING TRADE.

All dealers in **SPRINGS AND AXLES** will find it to their interest to send to us for Price List and Discounts. **WOOD, SMITH & CO., Fort Plain, N. Y.**

TURNED MACHINE SCREWS,

One-sixteenth to five-eighths diameter.
Heads and points to sample.
IRON, STEEL and BRASS.

Lyon & Fellows Mfg. Co.,

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The only GENUINE D. R. BARTON Tools

ARE MADE BY

THE D. R. BARTON TOOL CO.,

Cor. Mill and Furnace Streets, ROCHESTER, N. Y.

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H. O. STRATTON, - - - - - 33 Oliver Street, Boston, Mass.
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OLD COLONY RIVET WORKS,

KINGSTON, MASS.,

MANUFACTURERS OF

Rivets, Hand Iron Cutters, Punches, Shears, and Planing and Shaping Machines, Universal Ratchet Drills, and Patent Tinners' Snips.

New York Warehouse, 116 Chambers Street.

DOG MUZZLES.

The Patent Automatic, with Spring Jaw.

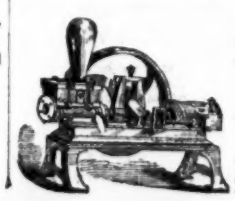
COMMON WIRE MUZZLES,

New Pattern, in nine different sizes. Also full and varied line of Metal and Leather

DOG COLLARS.

Stair Rods in Brass, Fire Gilt and Nickel-Plated.
Tacks, Escutcheon Pins, Hair Wire, Picture Wire, &c.
Special Brass Goods made to order.

W. T. & J. MERSEREAU, 321 Broadway, N. Y.



JAS. CLAYTON.

Water, Air & Vacuum

PUMPS

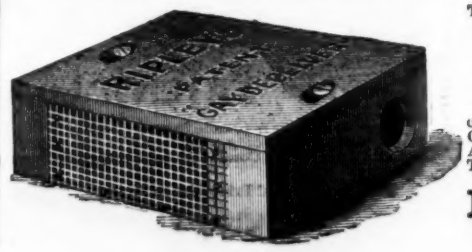
Air Compressors.

Prices greatly reduced.
Send for circulars.

11 & 16 Water St., Brooklyn, N. Y.

THE "GAY DECEIVER."

Best Catch-Alive Mouse Trap.



The Most Taking Novelty of the Season.

BUY NO OTHER PATENT TRAP.

Per gross, cased, $18.00; cases free.
Less quantity, $2.00 per dozen.

Don't wait for our agents, but secure the cream of the trade. First come first served. Circulars free. Sample Trap, prepaid, 25c. A handsome show card in each case Traps.

RIPLEY MFG. CO.,

Unionville, Conn., U. S. A.

H. D. SMITH & CO.,

Plantsville, Conn.,

Manufacturers of the

BEST QUALITY CARRIAGE MAKERS' HARDWARE.

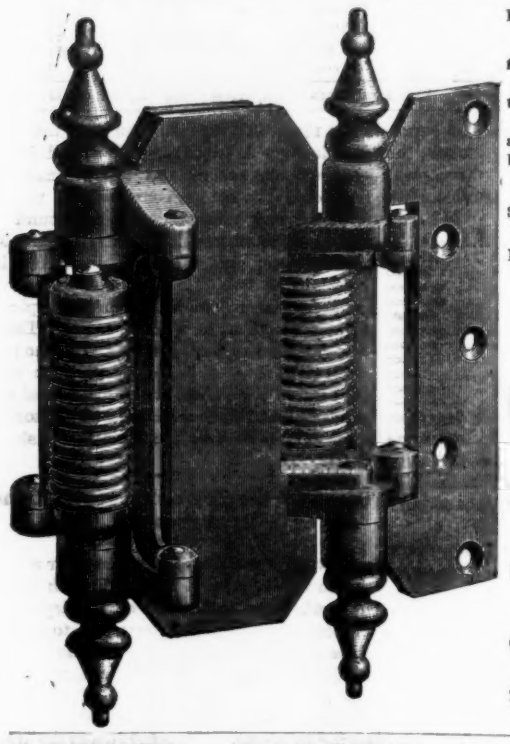
Manufacture the Largest Variety of Forged Carriage Irons of Best Material and Workmanship.

PRICES LOW FOR QUALITY OF WORK FURNISHED.

SEND FOR PRICE LIST.

Spring Butts for Screen Doors,

ON A NEW PRINCIPLE, THE MOST DESIRABLE.



POINTS OF SUPERIORITY:

They exert their greatest force at the closing point.

They will not allow the door to sag.

They will retain the door against the wall when opened back of a right angle.

Single acting, for swinging doors one way, doors ⅞ or 1 in. thick, per pair.....$1.25
Double acting, for swinging doors both ways, per pair..... 2.00
Liberal discount to the trade.

Send for circulars and prices.

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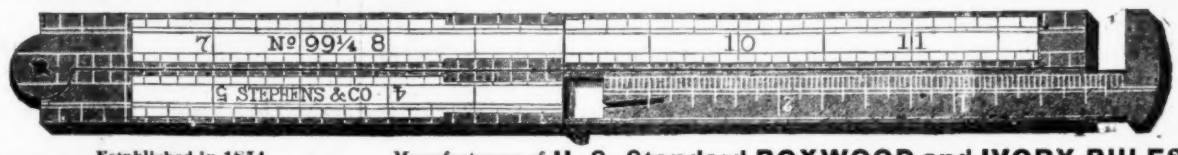

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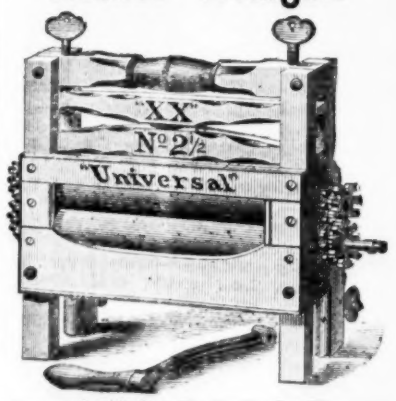

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New York, Thursday, July 4, 1878.

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The American Hardware Company, Melbourne, are ur agents for Australia. Sample copies will be mailed by them, free of charge, to any firm engaged in the trades we represent in Australia, Tasmania and New Zealand.

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Forty-third Page—Boston and St. Louis Hardware and Metal Prices.

A correspondent writing from Ohio gives us a gloomy account of the situation and immediate outlook in the new iron district of that State. He says: "It is reported "that the Baird, Gore and Winona furnaces "have decided to blow out as soon as their "present stock is exhausted, because of un- "remunerative prices. It is also probable "that the Bessie and the Moxahala furnaces "will take the same course. With these "furnaces out of blast, the production of "iron in the new Ohio iron district will be "greatly decreased." Granting all, or nearly all, that has been claimed for this district in the way of natural advantages, it is quite evident to the unprejudiced observer that there have been some very injudicious investments in plant, and a disposition to discount too liberally its possibilities of future growth and development. Conspicuous natural advantages often become a drawback and hindrance to the progress of a district when speculation steps in to anticipate the appreciation in values which, unless based upon legitimate commercial considerations, cannot be sustained.

Overproduction Again.

Mr. G. F. Filley, of St. Louis, in a paper read before the National Association of Stove Manufacturers at their Cleveland meeting, advanced some views with regard to the evils entailed by the use of labor-saving machinery which we think will scarcely find acceptance among those who have given thought to the economic questions which such a discussion naturally raises. We do not mean to say that Mr. Filley, for whose intelligence we have the highest respect, speaks without thought on this subject, but he certainly reaches conclusions which differ widely from those at which students of economic science generally arrive. As we print his address on another page we do not need to quote from it here more than a single paragraph, which summarizes the argument in a few words:

Some eight or ten years ago, at the high t of the apparent prosperity in Europe and this country, when all departments of industry were unusually active, an intelligent and observant Englishman made the tour of the world to ascertain the power of the steam machinery at work producing those things used by mankind in their daily life. The result of the examination is briefly summed up in these remarkable and prophetic words: "If," said he, "power and machinery shall continue to be increased and extended as it has been in the last thirty or fifty years, the time is not far distant when production will overtake consumption; and when that point is reached the commercial world will see greater distress than was ever known before." Is not the prophecy being fulfilled? Has not production already overtaken consumption, and is not the resultant distress to be seen all around us in the long and still lengthening record of insolvencies? The steam-power at work in France does the work of 31,000,000 men. But Great Britain is far ahead of all the world in its possession and application of machinery. Its spinning machinery alone (Arkwright's invention) does the work of 40,000,000 persons, and it has been stated that its entire steam-power is equal to that of 800,000,000 persons. Add what Great Britain has done and is doing to what France, Germany, Denmark, Norway, Sweden and Belgium have done in the same field; and also what we, with our fierce and reckless activity, have done in this remorseless competition for markets, and ask yourselves if the work of production has not reached and passed its climax.

Mr. Filley does not undertake to suggest a remedy for the evils to which he calls attention, but contents himself with noting the fact that the trouble he mentions exists, "that it is neither trifling nor transcient, "but serious, and the product of active "causes still at work and yielding every "day the fruits of insolvency, idleness and "distress." In this respect he is more modest and wiser than Mr. W. G. Moody, who read a paper on the displacement of labor by machinery at the recent meeting of the Science Association at Cincinnati. Mr. Moody began with the assumption that the laboring classes were better off before the invention of labor-saving machinery; that machinery has thrown millions out of employment and forced women and children to work long hours for a scanty pittance. He claims that it has broken up and destroyed our whole system of agriculture, which required the time and attention of all the sons and daughters of the farm, while now the sons seek cities for work and the girls go to factories to earn a living; that it has broken up and destroyed the work on wood, iron and leather in small shops where the rough material was wrought into finished articles; that it has taken up individual and independent action in production and manufacture, where any man with a trade could by his own hands earn his support, while now it is only so much pay for so much toil. That it has enormously developed the power of production, and that it has thrown half of the working classes out of employment. He held that the distress occasioned by it is not confined to the working classes, as it is seen in the 40,000 failures of the past five years, including every known business. The result is that most of this machinery is now idle, or nearly so. He concludes that the only way to correct this bad state of things is for Congress to pass laws limiting the hours of labor to a small number—three or five per day, perhaps—and thus enable all the working population to be employed without its resulting in overproduction. Cheapness of products the writer does not favor, because universal cheapness means universal poverty. He wants everything to bring a remunerative price to its producer, and then the world will get on more comfortably.

Probably both these gentlemen are inspired by the best and most generous of motives in urging their views upon the public notice. We know that Mr. Filley is one of the best and kindest of men, whose heart is moved by profound sympathy for all kinds of suffering and misfortune, and whose life reflects his love of right and justice. Mr. Moody we do not know, but are quite willing to accredit him with honesty of purpose and a true sympathy for the working classes. We are compelled to say, however, that both are widely mistaken, and that the effect of their utterances, so far as they reach the working classes, cannot but result in mischief. It is in consequence of such teachings less honestly promulgated that the farm laborers of many portions of the West are to-day threatening the farmers who employ machinery in harvesting their crops with the destruction of their barns and cribs, or are anticipating the need of carrying this menace into effect by going from farm to farm in the night and ruthlessly breaking the delicate mechanism of mowers and reapers or pounding other improved farm machinery into shapeless ruin. These men believe that machinery is displacing labor, and that by destroying machinery they are bettering their own condition. Does any one else suppose that they are doing anything except malicious mischief, which, by crippling the resources of the farmers and placing obstacles in the way of agricultural industry, gives rise to evils which react upon both employers and laborers, injuring both? The logic of events has long ago disproved this whole argument. The opposition of labor to machinery, growing out of a short-sighted, narrow-minded view of its influence upon the welfare of the working classes, has always ended in the triumph of machinery and a betterment of the condition of labor. The silk weavers of France destroyed Jacquard's looms and drove him away in fear of his life, but he came back and his looms have furnished employment for a hundred where only one was employed before.

We invite those who believe with Mr. Filley that the world is producing in excess of its requirements, or with Mr. Moody that the hours of labor must be arbitrarily shortened to prevent an oversupply of useful commodities, to consider a few elementary truths which they have probably overlooked or forgotten. They may be stated as follows:

1. The end and aim of human effort is abundance.

2. Abundance means plenty so distributed that all reasonable wants are satisfied.

3. A state of abundance was never yet attained in any civilized country of the world.

4. The needs and desires of a people are always increasing as new means of satisfaction are provided; consequently, it is impossible to say when the point of abundance would be reached even with a steadily increasing production. Probably it never would be attained.

5. Until more useful commodities are produced than are needed to satisfy the reasonable wants of possible consumers in the world, there can be no overproduction.

6. Whatever simplifies and expedites production tends toward abundance by increasing the supply and cheapening the cost of the article produced, bringing it within the reach of a greater number of consumers.

7. Machinery is incapable of exercising intelligence, and steam-power can never displace brain-power. When a machine is made which will do a man's work, experience has shown that two men at least are needed to prepare material for the machine to work upon, to keep the machine in order and to replace it when worn out.

8. The interests of the workingman must be considered from a double standpoint. He is both a producer and a consumer. As a producer he is benefited by a steady average increase (with fluctuations) in the purchasing power of his labor because of the progress of mechanical improvement which makes his labor more productive. As a consumer he is benefited by the cheapened cost and greater variety of the commodities accessible to him. These facts are clearly established by the comparative statistics published in Dr. Young's valuable treatise entitled "Labor in Europe and America," published by the government in 1875.

The trouble from which we are now suffering in common with other countries results not from an excess of production, but from artificial obstacles in the way of a natural distribution. The world's economists are agreed that this is in great part due to the heritage of curses left us by the great and destructive wars of the past. However this may be, it is certain that, even in our own favored land, a large proportion of the people are underfed, improperly clothed, without adequate shelter and in need of many of the common necessaries of life. Were their reasonable wants supplied and their reasonable desires satisfied, the surplus stocks which now burden our markets would disappear like water dropped upon sand, and all the mills and factories of the country could not satisfy the demand for more. As a manufacturer Mr. Filley may find it wise to restrict his production to the amount he can sell with profit; as an economist he should have no difficulty in seeing that the reason he cannot do a larger business is not because every consumer who wants a stove has one, but because there are more consumers than he could supply who cannot offer him anything in exchange for his stoves which he is willing to accept. No one bought more clothing, ate more food, slept in more beds, lived in more houses or consumed more of anything in 1870 than he wanted. Why, then, the lessened demand? Simply because consumption has been artificially restricted far within the limit of reasonable desires. Does any one suppose that this condition would be changed for the better if we could set back ten, twenty or thirty years the mechanical progress which has given us our present capacity for great and cheap production? If so he must reach his conclusions by strange methods of reasoning, and we can scarcely hope to say anything which will convince him of the truth of even so simple a proposition as that whatever tends to promote the general welfare is of benefit to all classes.

Our Export of Metal Goods to Spanish America and Brazil.

On examining the statistics of the Treasury Department having reference to our export of articles of more especial interest to our readers, it will be found that during the fiscal year ended June 30, 1877, the following amounts, in thousands of dollars, were shipped to Spanish America and Brazilian ports:

	Mexico.	Central America.	Cuba.	Porto Rico.	Venezuela.	Brazil.	Uruguay.	Arg'ntine Republic.	Chili.	Peru.	Colombia.	Total.	Total export to all countries.
Agri. impl'm'nts	21	1	34	5	4	8	51	79	59	18	34	314	1,816
Billiard tables	1	...	....	2	1	....	....	....	....	....	13	17	34
Blacking	5	1	4	1	1	11	2	1	5	3	1	35	102
M'f'r's of brass	4	....	87	1	2	....	....	....	....	....	....	94	328
Br'ms & brushes	3	1	16	5	4	5	....	....	6	14	2	56	172
Carriages	20	19	12	11	41	8	1	4	5	4	15	140	866
Railroad cars	2	32	55	1	49	....	....	....	202	7	....	348	539
Clocks	7	1	9	1	4	16	2	2	5	5	19	71	1,026
Coal	8	1	252	2	8	1	....	....	7	2	35	316	2,916
Cop. & m'f'r's of	8	1	7	1	147	....	....	....	....	1	3	168	3,023
Cordage	8	6	65	15	46	4	9	....	17	34	13	217	324
Earthenware	11	2	10	1	....	....	....	....	....	1	3	28	87
Gas fixtures	2	....	7	....	....	....	....	....	1	....	....	10	27
Glass ware	25	9	59	6	16	8	....	1	4	4	49	181	658
Cables (hemp)	13	1	56	2	7	5	1	....	9	23	4	127	871
M'f'rs. india rub	11	1	18	1	2	5	....	....	2	4	5	49	219
Rails	8	....	105	....	....	33	....	....	....	....	....	146	244
Iron castings	14	....	37	....	5	4	....	1	1	....	11	73	218
Car wheels	....	....	12	....	....	11	1	....	5	2	9	40	122
Stoves	5	1	1	....	5	1	....	....	2	3	2	20	113
Locomotives	....	2	65	....	....	350	....	....	....	73	....	490	569
Steam engines	11	....	10	16	2	2	....	....	1	....	....	42	54
Other machin'y	201	22	361	16	70	178	9	9	30	40	317	1,253	2,698
Nails and spikes	20	2	44	7	1	5	....	2	39	5	6	131	320
Other implem'ts	188	30	379	21	110	59	9	28	107	29	146	1,106	3,362
Cutlery	6	....	4	....	1	14	....	....	....	....	2	27	39
Edge tools	65	5	17	3	20	66	7	9	1	8	121	342	721
Files and saws	3	1	2	1	....	2	....	....	....	....	....	9	36
Fire-arms	119	4	49	6	3	1	1	4	1	....	319	507	5,260
Other man. steel	9	....	5	....	4	1	....	2	....	2	1	24	307
Lamps	9	1	10	4	10	24	4	7	3	8	7	87	243
Manf. of leather	68	27	31	4	9	10	1	2	1	3	37	193	871
Manuf. of stone	6	2	18	18	2	4	1	....	3	....	1	55	918
Matches	4	7	....	....	2	9	....	1	....	1	45	69	174
Scientific inst's	1	....	4	....	1	9	....	....	....	....	....	15	49
Musical "	11	1	1	1	7	17	....	4	14	1	8	65	911
Naval stores	4	1	24	2	11	52	21	27	10	19	3	174	2,144
Ref'd petroleum	223	15	527	65	78	904	154	231	137	73	44	2,451	55,401
Gunpowder	27	3	....	....	....	....	1	....	6	8	8	53	249
Cartridges	58	5	....	....	9	2	....	....	4	2	116	196	2,326
Paints	12	4	31	3	9	1	....	1	2	4	24	91	186
Plated ware	1	1	10	1	6	19	1	4	5	....	8	56	150
Printing presses	13	2	9	7	7	10	2	....	....	1	6	57	160
Quicksilver	253	23	....	....	1	....	....	....	19	141	28	565	1,767
Scales	7	1	15	3	8	1	1	3	11	5	4	59	159
Sewing mach	116	6	63	10	39	21	....	10	36	9	81	391	1,652
Spts. turpentine	1	....	13	1	1	30	8	16	18	7	....	95	2,275
Fire engines	1	....	....	....	....	7	....	....	....	....	1	9	62
Mfrs. of tin	6	3	10	1	3	3	....	1	1	1	1	30	87
Trunks	8	2	30	9	2	2	....	....	....	4	7	64	131
Varnish	3	....	3	1	1	2	2	5	1	....	....	18	61
Wood and mfrs.	156	51	2,580	355	123	287	221	102	255	290	142	4,562	18,438
Mfrs. of zinc	1	....	....	....	....	....	....	....	....	....	1	2	115
Totals	1,887	298	5,161	610	882	2,212	510	556	1,035	859	1,702	15,712	116,000

In the order of their importance as represented by the amounts set against each, the various countries with which we have principally dealt in the foregoing articles rank as follows:

Cuba	$5,161,000
Brazil	2,212,000
Mexico	1,887,000
Colombia	1,702,000
Chili	1,035,000
Venezuela	882,000
Peru	859,000
Porto Rico	610,000
Argentine Republic	556,000
Uruguay	510,000
Central America	298,000
Total	$15,712,000

To other countries we shipped of the same goods $100,288,000, making together $116,000,000. The share which Spanish America and Brazil had in the above exports of ours was, therefore, 14 per cent.

Separating the metal goods from other manufactures, we find that our shipments of the former were valued at $25,188,000, out of which Spanish America and Brazil received $5,985,000, or about 24 per cent.

The total shipments of all sorts of domestic goods (including those above enumerated) to the American countries named were the following:

Cuba	$12,709,003
Brazil	7,498,118
Mexico	4,503,802
Colombia	3,942,742
Chili	2,175,467
Venezuela	2,775,149
Peru	1,239,006
Porto Rico	1,980,265
Argentine Republic	1,129,168
Uruguay	1,077,434
Central America	913,307
Total	$39,943,461

The proportion of metal goods was, therefore, 15 per cent.

The foregoing proves that the share which Spanish America and Brazil receive of our general export of metal goods is quite considerable, and that the proportion of metal goods to all other merchandise shipped thither from this country is also sufficiently important to show that our manufactures in this line have gained a firm foothold in their markets, giving the best encouragement to our merchants and manufacturers to persevere in that direction.

The Railroads of the United States.

On another page will be found copious extracts from the advance sheets of "Poor's Manual," as it is familiarly called. As a work of private enterprise it stands among the most remarkable statistical undertakings of the world. The issue for the present year contains abundant matter for reflection. The figures shown, although in the main satisfactory, are not without features which should excite serious concern. It seems evident from an examination of these figures that the day for the unlimited growth of railroads is over, and that in the future a great trunk line cannot be established by running a line of road into the wilderness and building up the country.

At the present time we have, in round numbers, some 79,000 miles of railroad, which gives us about one mile of railroad to every 500 inhabitants, certainly enough to meet all the present necessities of internal trade. To those, however, who consult the maps seeking for locations for roads there seems to be abundant opportunities. Vast stretches of country are to be found in both Northern and Southern States where no roads are located and where none are needed. We are not likely to witness soon again a speculative mania in railroad building, especially as it is no longer possible to secure State aid or to bond towns and counties for the construction of any more roads beginning and ending nowhere.

The dividends for 1877 show a decided falling off from 1873. In some sections of country, notably in New England, the decrease has been steady since 1873. In the Middle States there has been a decrease since 1875. The specific cause of this general decrease is probably to be found in the greater competition and the business depression. It would appear that the remedy is, in a great measure, to be found in more competent business and mechanical management and a better understanding between the two. The science of railway management is one that cannot be picked up as an incident of a business life. This is becoming better understood, and in the next generation it is to be hoped that we shall have less of the shameful blundering and mismanagement that has marked the history of many of our best roads within the past ten years.

Causes of the Depression of the French Iron Industry.

Toward the close of the last year a committee was appointed by the French Senate to inquire into the causes of the depression in commerce and industry, and to suggest some means of remedying it. This committee has now published its report, which reveals a series of causes, some of which are similar to those affecting our own manufacturing interests, while others claim the attention of American manufacturers for other reasons. Representatives of all the great industries appeared before the committee, the iron interests presenting an array of names which lent great weight to the unanimous declarations of the trade. Foremost among them were M. Jullien, director of the Terrenoire Works, and M. Schneider, of Creuzot. One of the principal causes to which the existing depression in the iron trade was ascribed was the rapid growth of the metallurgical industries of the United States, and to the overproduction caused by an extension of manufacturing facilities based upon the abnormally increased demand after the Franco-Prussian war. These sentiments are forcibly expressed by M. Jullien in the following language: "In the "years 1872 and 1873 a rapid development "in trade, and especially in the iron trade, "was brought about in consequence of the "war. Prices rose rapidly and profits were "secured by all establishments then in ex- "istence. Prosperity encouraged the ex- "tension of metallurgical industry; in Ger- "many especially a considerable number of "new works were built. In Belgium the "capacity was similarly increased, while "French and English manufacturers, though "more cautious, took a part in this move- "ment also. This development was such, "however, that at the end of a short time "production by far surpassed consumption. "The German works, it is certain, are now "so extensive that to-day they are capable "of furnishing rails and iron not alone to "Germany, but to all Europe. The conse- "quence of this excessive growth was a fall "in prices, which became irresistible when "the development of the metallurgical in- "dustry of America became more pro- "nounced. This is a great fact which re- "quires careful attention. I consider it the "chief cause of the fall in prices. The "American market was the principal outlet "for England, which sent enormous quanti- "ties of rails to the United States. But "America has within a short time, more "rapidly than could be foreseen, developed "her metallurgical industries so that I be "lieve the American market to b

"closed against England forever. I would "not go further and maintain that "in France we need fear the compe- "tition of American products. Fortunately "for us the great centers of manufacture of "the United States are far from the coast, "so that I do not believe we need fear "the introduction of American products for "a long time; but as England no longer "possesses the great outlet she once had, "she naturally seeks to throw her products "into Italy, Spain and France. This has "caused an excessive fall in prices, which "has been followed by German and Belgian "manufacturers. In my estimation the "principal causes of depression are exces- "sive production and the closing of the "American market."

M. Jullien, who only a few months ago advocated a lower tariff on some articles, now urgently pleads for the maintenance of present duties, substantiating his arguments by a series of facts and figures which tend to show that French metallurgical industries must succumb unless protected. It is a curious coincidence that French ironmasters energetically resist any legislative changes; thus, M. Schneider, the owner of the famous Creuzot Works, declares that the causes of the present depression are too profound, too intricate, to be suddenly removed by acts of government. It is urged that the only means of meeting foreign competition, if the duties should be lowered, would be to reduce wages and thus force the workman to bear a considerable share of the losses attendant upon the present struggle for the possession of a market for the iron produced.

Blast Furnace Statistics of the Chattanooga District.

Having occasion lately to ascertain the number of furnaces in blast in the Chattanooga district, it was suggested to us to push our inquiries somewhat into detail; and though the results are similar to those which would be developed by like investigation in other districts, yet there are special points shown by the present condition of ironmaking in the Southern region as a whole, and particularly in the Chattanooga portion of it, which would not be found elsewhere.

Except in one trifling instance—which proved a failure—the coke furnace was unknown in the South before the war. The exception was a small coke furnace located in Chattanooga, which made a small amount of "white" iron, and ended in a "chill," in 1860. The charcoal irons of the South, however, had attained a wide reputation 10 years before the war, and were produced in considerable quantities, those of East and Middle Tennessee and Southwest Virginia being specially prized for the manufacture of boilers and for other purposes where great tensile strength was required; and it may be added that these irons still bear a high repute for such uses. The census of 1850 showed that Tennessee was the second State in the Union in the product of charcoal pig. North Georgia and Alabama had also attained considerable importance as producers of "fine charcoal" irons. The success of charcoal ironmaking in the South previous to the war was remembered at the end of the strife, and the recollection greatly stimulated investments in that line of manufacture from 1865 to 1874. Of the 24 charcoal stacks now standing and capable of being put in blast without rebuilding, in East Tennessee, North Georgia and Alabama, only nine, all of the smallest size, were built before and during the war. The other fifteen were all completed from 1868 to 1874.

In Alabama there are nine charcoal furnaces, with an annual capacity of 47,500 tons. Of these three are in blast with a total capacity of 22,500 tons per annum. The average capacity of the stacks in blast is 7500 tons; the average capacity of the six stacks out of blast is 4166⅔ tons.

In Georgia there are eight charcoal furnaces, all out of blast. Their annual capacity is 36,200 tons. Probably none of these will ever be blown in again except the Cherokee, which has an annual capacity of 10,000 tons, and will be put in blast in September next and continue in blast a year if the market justifies it.

In East Tennessee there are eight charcoal stacks, with an annual capacity of 16,000 tons, of which but one is in blast. This has a capacity of about 2000 tons, and is owned and operated by the Knoxville Car Wheel Company, and its product is all consumed by that company. The average annual capacity of those out of blast is 2000 tons.

There are in East Tennessee, North Georgia and Alabama—*i. e.*, in the Chattanooga district—eight coke furnaces, five of which are in blast, which have a total annual capacity of 50,800 tons, an average of 10,160 tons each; three are out of blast with a total capacity of 32,000 tons, an average capacity of 10,666⅔ tons each. One of these idle stacks is in the Rockwood plant—one stack, the larger and better one, being in blast. The only large idle coke furnace is Oakdale, which is unfortunately located with reference to transportation, being on neither a navigable river nor a railroad. The other two that are out of blast are small and not modern in construction.

It does not require any analysis of these facts and figures to show that the days of the small furnace are numbered; and it is only needed to point to Oakdale, one of the best-built stacks in the country and surrounded by fuel and ore, to illustrate the folly of putting a furnace any place but where the cheapest transportation can be had at minimum cost of handling the product, no matter what the inducements may be offered in the way of fuel and ore.

The struggle between employers and workmen in the British iron trade is now assuming a shape in which the odds are decidedly against labor. The abstract of the sixth annual report of the Iron Trade Employers' Association, which we print on another page, shows that the members are preparing to combat the unions by means likely to prove effective. The report advises the discharge of all foremen who are members of the union, and urges the importance of united action in all measures adopted for the protection of capital. The recommendation with regard to unionist foremen is made on the ground that a man cannot serve his employer faithfully in a position of trust and still be a member of a labor organization. This should not be assumed, except when the fact is proven by experience. We cannot, however, wonder at the tone of the report or the feeling of employers. Wages in Great Britain are now above the normal level, and must decline until that level is reached before anything like general prosperity can return to British industries. In this country they have declined below the normal level, and must advance, probably from 10 to 25 per cent., before a healthy industrial and commercial activity can be expected.

THE PARIS EXPOSITION.

American Exhibits.

(From our Special Correspondent at Paris).

S. HARTSHORN,

486 Broadway, has on exhibition samples of his patent shade roller, which is simple in construction and effective in operation.

L. H. OLMSTED,

of New York, have an exhibit of Little Harry's odorless safety night lamp. This little favorite is shown in various shades of colored glass, handled and plain, mounted in brass, with small reflectors, as brackets, &c.

THE FRAZER LUBRICATOR CO.,

of New York, exhibit their well-known lubricator, the Frazer axle grease, which they claim to be a superior lubricant, made from pure fresh oils and free from gum, acid, sediment or water.

A small working model of

THE BLAKE CRUSHER,

to be run by hand, is exhibited in the Machinery Department. We learn that similar machines have been made for laboratory uses and for other purposes when but little material was to be operated upon, especially in reducing large lumps to a size for the mortar. We have so often described this machine that it would be useless to repeat it. At this exposition the best exhibits of American invention are to be found in the English section.

F. S. PEASE,

Buffalo, N. Y., makes a fine display of crude petroleum, both of common gravity and lubricating and refined. In the illuminating oils they claim higher fire test and superior color. They have samples of kerosene, signal head light, and miners' oils among their illuminating oils, and crude, West Virginia and Franklin, Pa., lubricating oils, and the same prepared for such uses as sewing machines, engines, cars, cylinders, &c.

CRANE BROS.,

Chicago, Ill., make an exhibit of but one branch of their extensive line of manufactures, brass and malleable fittings for steam, water and gas. The brass fittings include a large line of samples of compression bibb and air cocks of various sizes, water gauges and oil cups. In malleable iron a large number of sizes and patterns of joints, crosses, lock nuts, elbows, &c., for water and gas pipes are shown. The display also includes taps and dies and lever-handled oil pumps.

Messrs. Hamelle & Fleutelot, of Paris, the agents of

LEONARD & ELLIS

of New York exhibit special oils for cylinders made under the trade-mark "Valvoline." It is asserted regarding the manufacture of this oil that no substance is used which is not neutral and absolutely pure. The oils are stated to stand 350°, to be unchangeable and not to congeal, while 50 per cent. economy in use and, from its perfect lubrication, a much greater and more uniform power is obtained, and a consequent smaller consumption of fuel and less wear of parts results. The Centennial award to this oil was based on its extreme purity, its resistance to vaporization and its great lubricating power.

IDEN & CO.,

of New York, make a fine display of brass and bronze gas chandeliers, hall, pillar and drop lights. The designs are very light and graceful in some of these goods, especially those finished in brass and gilt. The gold and bronze finish of others has a very pleasing effect, while the bronze in various colors has the solidity that so many prefer.

BAEDER, ADAMSON & CO.

make an exhibit of their well-known manufactures, including both glue and other animal products, and flints and emery papers. The display of the latter includes flint rock in its natural state and flint and extra flint sandpaper made by their improved process, both in sheets of ordinary size and in rolls of 25 and 50 yards. Among other goods shown are emery paper and cloth glue, hair, rawhide and rawhide whips, bone dust, moss, &c.

J. R. BAKER'S ANTI-FRICTION METAL CO.,

400 Canal street, New York, exhibit samples of their American white brass for journal bearings, gibs, &c., for which they claim superior wearing qualities, absence from heating or cutting, running with less friction and a great saving in oil. They also exhibit samples of Baker's white brass lining metal.

WALTON BROS.,

New York, make a small exhibit of railroad lanterns, pocket dark lanterns and railroad punches. A patent railroad signal lantern for instantly changing the color of the light from white to red is quite ingenious, a red cloth being raised or lowered over the glass by very simple mechanism. They also show a galvanized iron army feed box, which is adopted by the U. S. government.

THE WATERBURY BUTTON COMPANY,

of Waterbury, have made a very handsome display of their goods. It includes a large line of brass, metal, mineral and cloth buttons for military and naval uses, schools, secret societies, as well as for common and every day use. These are arranged in a fine case in various patterns, making an attractive exhibit. They also show belt clasps, buckles, slides, &c., and jewels for secret society and military organizations.

THE LOBDELL CAR WHEEL CO.,

of Wilmington, Del., which asserts the claim to be the oldest car-wheel establishment in the United States, having been established in 1836, make a very creditable display, not only of car wheels, but of other manufactures of chilled iron, such as chilled rolls for paper and rubber manufacturers, and for welding tubes. The wheels shown are of all sizes, from those for running cars of 18 inch diameter up to the largest for engine tender and car service of 50 inches. The record of some of these wheels is marvelous. In June, 1874, a wheel was removed from a freight car on the Erie Road which had been 25 years in constant service, and though no record had been kept of its mileage, it must have been upward of a million miles. Other wheels are shown from the Philadelphia, Wilmington and Baltimore Railroad that were in use from 20 to 22 years. Fourteen, 16 and 18 years seems no uncommon record for these wheels. Records are shown of 56,668, 65,176 and 79,000 miles. The wheels on exhibition that have made these high mileages are mounted side by side with new ones of the same size, and the wear becomes at once manifest. Many of the wheels are turned on the tread under a process patented by Mr. W. W. Lobdell. This is to prevent the chipping out to which chilled wheels are somewhat liable, and it is claimed to be a successful process. The Union Pacific Railroad have it in use and find it especially valuable in turning up old wheels.

The chilled rolls shown consist of a stack of 10 rolls for calendering paper, and three disconneeted rolls for rubber or paper, one of which is hollow for the admission of steam for drying or heating, so as to give a better surface to paper. The rolls in the stack are from 8 inches to 16 inches in diameter and 86 inches on the face. They are ground separately, and are so true that when placed together they bear upon each other through their entire length. These rolls are very highly praised by the French paper manufacturers. In the first place, they are said to be larger than any in France, the largest in use here being 60 to 70 inches in length, and, secondly, the French rolls are of soft iron, or if chilled but the thinnest skin is obtained, and they fail in that uniformity combined with surface and great hardness which are the distinguishing features of chilled rolls made from American cold-blast iron. A roll is shown which is supposed to be the largest chill roll ever cast, being 127 inches on the face and 8 in diameter finished. When the difficulties of casting chills are remembered this is a marvel. Its surface seems perfectly true and without a flaw. There are also shown two rolls for use in welding and straightening tubes, or for lap-welding. It is claimed for these that the superior hardness of the chilled surface gives a much longer life than those made of soft iron.

In connection with the calendering rolls mentioned above is an expanding pulley, the invention of Mr. Geo. C. Lobdell, which has considerable merit. The principle of expansion is the forcing of a cone into the center of the pulley by a wheel which encircles the shaft and is so connected with the cone that when the shaft and pulley are in motion, simply holding it will operate the the expanding gear. The spokes of the pulley move in sleeves.

The exhibit of

A. WHITNEY & SONS,

of Philadelphia, though not so extensive as that of either of the other car wheel manufacturers, is very good, and shows perhaps by its arrangement the peculiar chill and fracture of car wheel irons better than the others. In a small show case, not so high as to be difficult to examine, are a number of samples of chilled iron broken so as to show the depth and character of the chills The specimens are very fine, showing great regularity in the depth of chill and a fracture resembling the hardest and most compact steel. In the rear of this case the firm show single and double plate chilled iron car wheels and tram wheels of the spoke pattern. A car wheel has an incription that speaks volumes for the grade of wheels made by this firm. It shows that the wheel, which is a 33-inch single plate one, had run under an engine tank over 120,000 miles and was still good for service. The firm of A. Whitney & Sons is one of the oldest in the United States manufacturing car wheels, having been established in 1847 or near this date. It was the first to make car wheels with the plate or disk straight or nearly so, and strengthen it by brackets or arms extending from the hub to the rim. They also use a patent process of annealing which they claim gives their wheels a great advantage. Their works have an annual capacity of 90,000 wheels.

ROBERT TAYLOR & CO.,

of Philadelphia, exhibit several hundred crucibles of different sizes and adapted to various uses, such as the melting of gold, silver, brass, copper, nickel, steel, &c. The crucibles are divided into classes, from No. 1 to No. 150, each number representing a melting capacity of three pounds of bronze. The actual capacity for different metals varies with the specific gravity, as, for example, at the United States Mint, the crucible No. 70 melts 200 pounds of bronze, 250 of silver and 350 of gold. The following table gives the numbers, dimensions, liquid contents and melting capacity of the crucibles made by this firm:

No.	Hight. Inches.	Breadth. Inches.	Liquid capacity Pints.	Melting capacity Lbs.
1	3½	2⅞	½	3
2	3¾	3¼	½	6
3	4⅜	3⅞	1	9
4	5	4½	1¼	12
5	5⅝	4⅞	1¾	15
6	6¼	5⅛	2¼	18
8	7	5⅞	3	24
10	7¾	6⅝	4½	30
12	8½	6⅞	5½	36
14	9	7⅛	6½	42
16	9½	7¾	8	48
18	9¾	8	9¼	54
20	10	8¼	10	60
25	10¾	8⅝	12½	75
30	11½	9	14	90
35	11¾	9⅜	16½	105
40	12⅜	9⅝	18	120
45	12⅞	9¾	20½	135
50	13⅜	10⅜	24	150
60	14	10¾	26½	180
70	14⅝	11	29	210
80	14⅞	11¼	31	240
100	15⅜	11⅞	35½	300
125	16	12⅝	38	375
150	16⅞	13	50	450

This house makes retorts for the distillation of zinc, tuyeres for blast, and other articles of the same class. The refractory nature of the crucibles made by this firm is most effectively shown by three old pots contained in the exhibit. One of these run 11 heats of steel at A. Foster's steel works, Philadelphia, melting 520 pounds. Another from William & Harvey Rowland's run 12 heats, melting 720 pounds of steel. As the usual life of a crucible for melting steel is five or six heats, this is certainly most excellent work. A crucible which has been used for melting nickel at the United States Mint, Philadelphia, is also shown, which run 20 heats.

THE JOSEPH DIXON CRUCIBLE COMPANY

of Jersey City, N. J., make a very complete exhibit of their manufacture of plumbago, for which they are so well known, together with samples of the crude material, both in the lump and ground, and in the beautiful carvings which attracted so much attention at Philadelphia. Two very large and exceptionally fine specimens of crude plumbago as it comes from the mines are shown, one of the granular variety from Colombo Ceylon, about 18 inches cube, and the other laminated, about 24x18x12 inches, from Ticonderoga, New York, where this company have extensive mines. The first named is carved in intaglio to show its extreme hardness, the engraving being quite sharp, showing none of the brittleness so characteristic of graphite. Other lump specimens show other forms of crystallization and the associated minerals found with plumbago. The carvings to which we have referred show the hardness of the mineral and the polish of which it is susceptible, but are more curious than beautiful or useful. The exhibit of the crude plumbago prepared for various uses in the arts, is very interesting. Some 96 samples are shown, and to one who has known plumbago chiefly as a material for pencils and stove polish, the uses to which it is applied are very interesting. Among these are crucibles, glass, felt hats, gunpowder, shot, paint manufacture, electrotyping, foundry facings, washing ingot molds and steel ladles, and for all purposes of lubrication, from the pivots of a watch and the wires of pianos and organ slides to the huge cylinders of a blast furnace engine. For many of these uses the least impurity of grit or spar renders plumbago valueless, and care and skill must be exercised both in its selection and preparation. The crucibles exhibited show the sizes and variety of the manufactures of this house, ranging from the smallest in use for melting gold to the largest for steel or brass with a capacity of 600 pounds. The manufacture of black-lead crucibles in the United States was commenced by this house in 1827, there being at that time but one other in the world—Kaufman's, at Obernzell, in Bavaria. The Dixon crucibles were so much superior to these that they soon drove the "Dutch Pots," as they were called, out of the market. These crucibles were at first made from plumbago found in New Hampshire, but Mr. Dixon having seen some specimens of Ceylon plumbago brought to America as curiosities began its importation, and this company still continues to be its largest importers in the United States. The exhibit includes a number of samples of the various grades of stove polish manufactured by this house, known as the Dixon, Japanese, Jet Black and Gem. Of the several kinds, from 2,000,000 to 3,000,000 cakes are made yearly. The exhibition, however, of the most interest to the casual visitor is that of Dixon's American Graphite Pencils. These are shown in every conceivable variety, from those for the most delicate drawing to the heavy, coarse one for carpenters and masons; from the cheap grade with natural wood to the highly finished satin pencil. A cabinet is in transit to the Exposition containing 1001 pencils no two of which are alike. Every manipulation in the manufacture of these pencils is by machinery instead of by hand labor. The samples of drawing which are shown in connection with the exhibit fully attest the superior character of these pencils as to grading, uniformity and color of leads and softness and clearness of mark. The production of these pencils is 68,000 daily as an average.

The only locomotive of American manufacture exhibited is one from the

PHILADELPHIA AND READING RAILROAD CO.,

fitted with Worten's patent for burning coal dust. It is not a handsome looking piece of mechanism; indeed the peculiar style of engines used on the Reading road are not renowned for their beauty, but the success of this engine in utilizing anthracite dust will cover a multitude of sins against the canon of the beautiful. This engine has the appearance of the ordinary engine of the road, the cab being mounted over the fire-box, except that it seems overgrown in the region of the fire-box and ash-pan. It has two doors for stoking instead of one. On examining its construction the furnace is found to contain double the heating surface of that of the ordinary locomotive of this class, the dimensions of the fire-box being 8 feet square against 8 feet by 3 feet 6 inches. The ash-pan is of sufficient capacity to contain the entire contents of the fire-box. The distinguishing feature of the construction of the engine is a fire-box wider than and a grate as wide or wider than the distance between the driving wheels, and arranged above the same. This large fire-box is combined with a bridge extending across it, and having an auxiliary combustion chamber. In Mr. Worten's earlier experiments on the burning of coal dust in the fire-box of the ordinary anthracite locomotive with fire-box of the usual construction, a blast was used to aid combustion, but in the locomotives of this construction the blast is found useless, the ordinary exhaust blast being at all times sufficient, and occasionally too strong. To regulate the blast, and consequently the generation of steam, a very ingenious arrangement is in use. It consists of a valve having the appearance of two flat wheels, with spokes occupying about half the circle formed by the flat surfaces, very similar to the old-fashioned register used in heating furnaces. This is attached to the front of the engine, just before the head of the boiler and connected with the smoke-stack. By opening or closing this, as is easily done from the cab by the engineer, the draft is perfectly regulated. A heater, the invention of Mr. Worten, is also attached to the exhaust of the engine. It consists of 30 small tubes contained in a larger tube. The water passes outside of the tubes and the steam inside, heating the water to 160° F. Some of the dimensions of this engine, which is a six-wheel connected one with trucks, as compared with an engine of the same class of the ordinary type, is as follows:

	Ordinary.	Worten.
Cylinders	18x24 in.	18x24 in.
Diameter Driving Wheels	54 in.	54 in.
Weight on Driving Wheels	53,536 lbs.	.....
Diameter of Truck Wheels	30 in.	30 in.
Wheel-base	20 ft. 5 in.	20 ft. 5 in.
Diameter of Boiler	46 in.	46 in.
Number of Tubes	198	198
Length of Tubes	11 ft. 6 in.	11 ft. 6 in.
Diameter of Tubes (outside)	1¾ in.	2 in.
Length of Fire-box	8 ft.	8 ft.
Width of "	3 ft. 6 in.	8 ft.
Heating surface Fire-box	86 sq. ft.	.....
" of Tubes	1,041 sq. ft.	1,041 sq. ft.
Total heating surface	1,127 sq. ft.	.....
Grate area	23 sq. ft.	164 sq. ft.
Diam. smoke stack (inside)	14 in.	20½ in.
Exhaust nozzle, variable	3¾ to 4¾ in.	4½ to 5 in.
Total weight of engine	76,832 lbs.	85,792 lbs.

On a trial trip made before the engine left America, the following load was drawn:

	Tons.	Cwt.
Weight of Coal	643	13
Light Car Weight	397	4
Caboose	3	10
Total	1,044	7

A practical test of one of the engines, in hauling coal trains for one month, showed that the fuel used cost only three cents per mile, against 12 cents, the cost of running an ordinary engine. The coal dust is to be had for nothing, but hauling and handling it makes it cost a trifle. It has also been found that so far from using a greater quantity of the small pea coal or the dust, the new furnace actually uses less. The same grate will also burn as well as the dust any of the larger sizes of coal, and the grate is also applied to marine and stationary engines. The engine is No. 412, that representing the number consecutively built at the Reading shops. It was ordered on the 14th of February, and was constructed in 21 working days. It is plainly finished, like an ordinary freight engine. After the exhibition the engine is to be tendered to some of the railroad companies of Europe to test its advantages. Italy is at present stated to be its probable place of destination, with the design not only of introducing its claims, but those of anthracite coal, as well as in the hope of opening a market.

The following are some particulars in regard to the "life" or endurance of some of the principal parts of the engine, together with figures not previously given:

Approximate weight of engine, 85,792 lbs.; approximate weight of tank, empty, 22,200 lbs.; diameter of drivers, 54 inches; journals, 6½ inches; life of steel tire, 175,000 miles; life of cast-iron tire, 27,000 miles; life of truck wheels, 50,000 miles; diameter of truck wheels, 30 inches; side rod brasses run 30,000 miles; cylinders, 18x24 inches; roller valves (Bristol's patent), 30,000 miles; lap, ⅝ inch; lead, 1-16 inch; full throw, 4¾ inches; steam pipe in boiler, 4 inches; S. B., 4¼ inches; exhaust, 3 to 5 inches; boiler, 46 inches diameter; 160 flues 2 inches in diameter, 10½ feet long; boiler, largest diameter 54 inches; heating surface in flues, 850 square feet; life of iron flues, 128,000 miles; total heating surface, 967 square feet; fire-box, inner side sheets, ½ inch thick, good for 129,000 miles; crown sheet iron, 5-16 inches; outside, ⅜ inches; water grate bars, 2 inches outside, 1½ inside, 2⅛ clearance, 4½ fall, will last as long as fire-box; grate area, 64 square feet; fire-box, 8½x7½ feet; boiler (double riveted) iron, ⅜ and ½ inch; water space, 3½ inches; smoke box, 34 inches long from flue sheet; stack, 20½ inches inside; spark arrester, corrugated iron, ⅛ inch thick at bottom, 1-16 at top; pump, 3½x11 inches; grate bars, 5-16 and 9-16 inch space; 168 bars.

The London *Engineer* is informed by its Birmingham correspondent that the virtue of some of the hardware manufacturers there is being severely tried by the demands of Australian and Canadian shopkeepers that they shall copy American patterns and offer their goods at less than American rates, while heretofore they have been offering an inferior forgery at full American prices. The demand does, indeed, show a certain loyalty to British interests. It shows, too, the rotten spirit of trade that has been so often complained of by consumers, and that has done much toward bringing British fabrications of cotton as well as of iron into disrepute, not in British colonies only, but in South America, in all parts of Asia and in many portions of Europe. The trade-mark convention was negotiated simply to prevent the counterfeiting that is here proposed to the manufacturers. When it was agitated the facts were denied. Now the fact is not only tacitly conceded, but its continuation and increase on a more elaborate scale is advocated by merchants abroad to manufacturers who have shown themselves only too apt in this very field of specialized labor. We know that edge tools and cottons and other counterfeits of American manufactures are a regular branch of British industry. The practice shows the controverted superiority of our wares. The fraud, of course, will be detected by consumers, and perhaps in the long run it will not work badly.

AMERICAN SCREW CO.,

Providence, R. I.,

MANUFACTURERS OF MORE THAN 4000 VARIETIES OF PRODUCT,

AND INCREASING THE ASSORTMENT DAILY.

Machinery employed contains important inventions recently patented, and which are designed to produce Screws at a **lower cost to the consumer** than has ever been attained.

All goods are distributed through the Hardware trade, to whom a liberal discount will be allowed.

(*No. 235.*)

INTERNATIONAL EXHIBITION.

PHILADELPHIA, 1876.

The United States Centennial Commission has examined the report of the Judges, and accepted the following reasons, and decreed an award in conformity therewith.

PHILADELPHIA, November 8, 1876.

REPORT ON AWARDS.

Product: **Iron, Brass and Steel Screws, Tire and Stove Bolts, Rivets.**

Name and address of Exhibitor: American Screw Company, Providence, R. I.

The undersigned having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for Award, for the following reasons, viz:

Being of a quality nearly approaching perfection, showing the highest attainment in this branch of manufacture.

G. L. REED. Signature of the Judge.

Approval of Group Judges.

Daniel Steinmetz, G. L. Reed, J. Diffenbach,
Jas. Bain, J. D. Imboden, Dav. McHardy.
Chas. Staples,

A true copy of the record. FRANCIS A. WALKER, Chief of the Bureau of Awards.
Given by authority of the United States Centennial Commission.

A. T. GOSHORN, Director-General.

[L.S.] J. L. CAMPBELL, Secretary. J. R. HAWLEY, President.

After forty years' experience we offer to the trade our Centennial Screws, patented May 30, 1876, as the best we have ever known.

The method of manufacturing is also patented, and we are changing our machinery as fast as possible, to manufacture the improved article only. To introduce them, they will be sold at the same price as the old style screw.

The new screws will be packed in manila colored boxes with the new label covering end of box, and enlarged figures showing plainly contents.

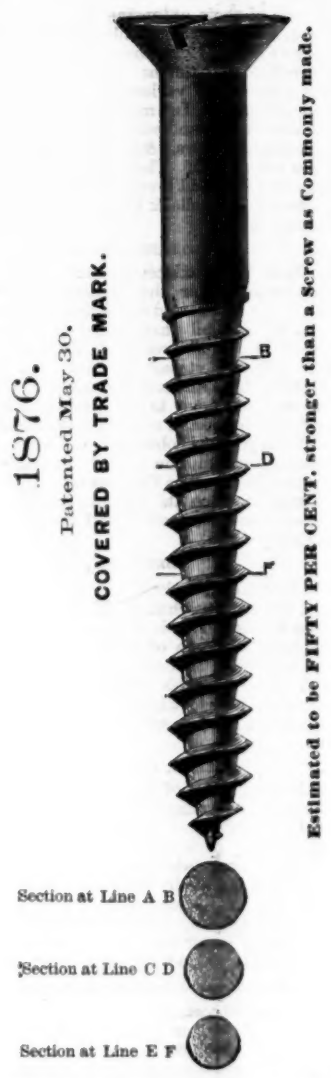
To distinguish this screw we have adopted a trade-mark, which is also secured to us.

The accompanying engravings show the progress of making screw from the old blunt point to style now adopted.

Experience has shown that the weak point of screws, as formerly made, is at the heel of the thread, where all the strains of forcing the screw into the wood naturally concentrate.

To avoid the sharp angle existing in the old style of screws has been the aim of all manufacturers, but every expedient hitherto adopted has proved as objectionable as the evil complained of.

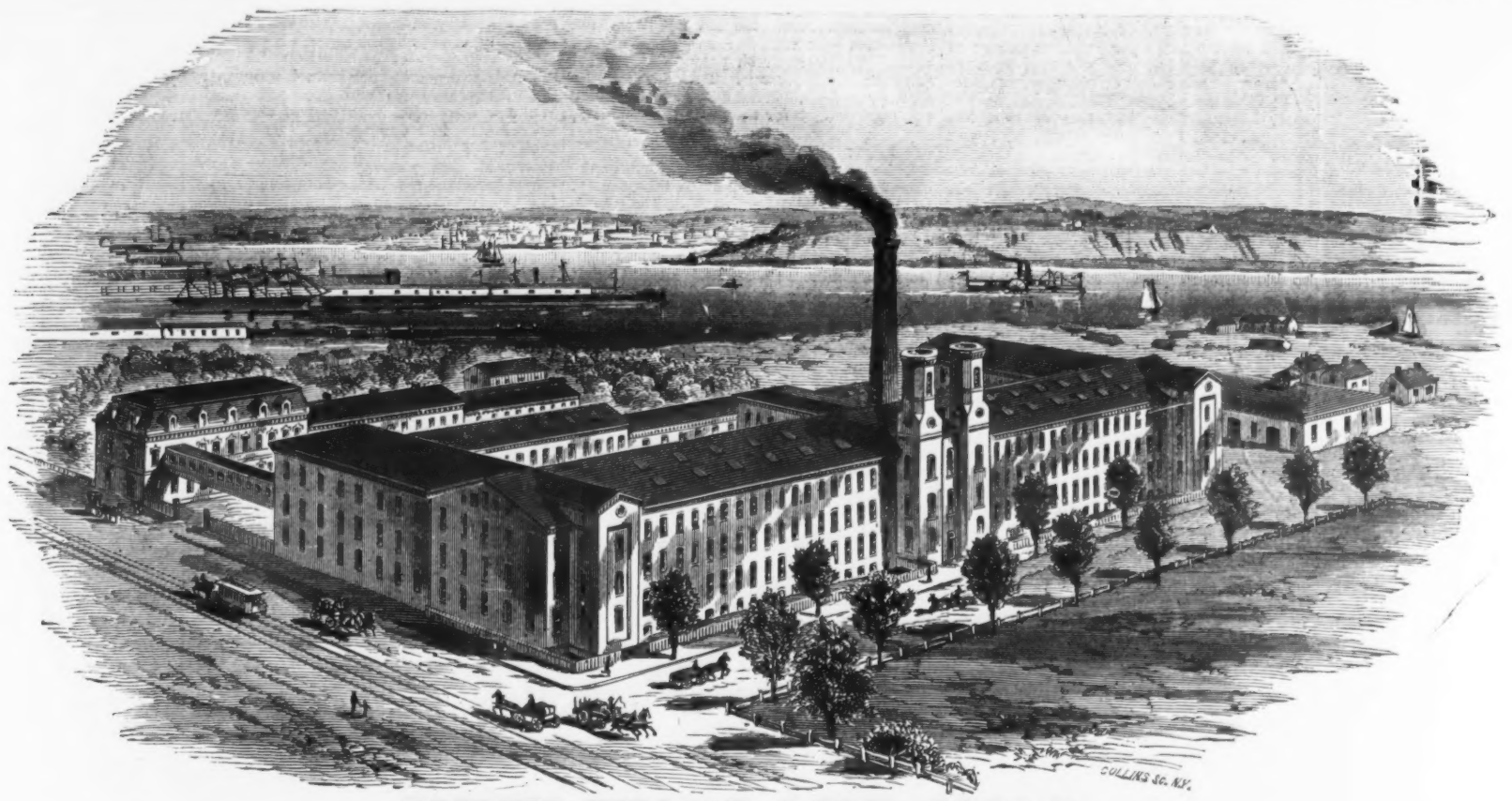
It will be seen in our new screw that not only is the sharp angle avoided, but the strength very much increased, as illustrated. See sections at lines.



CLAIM.

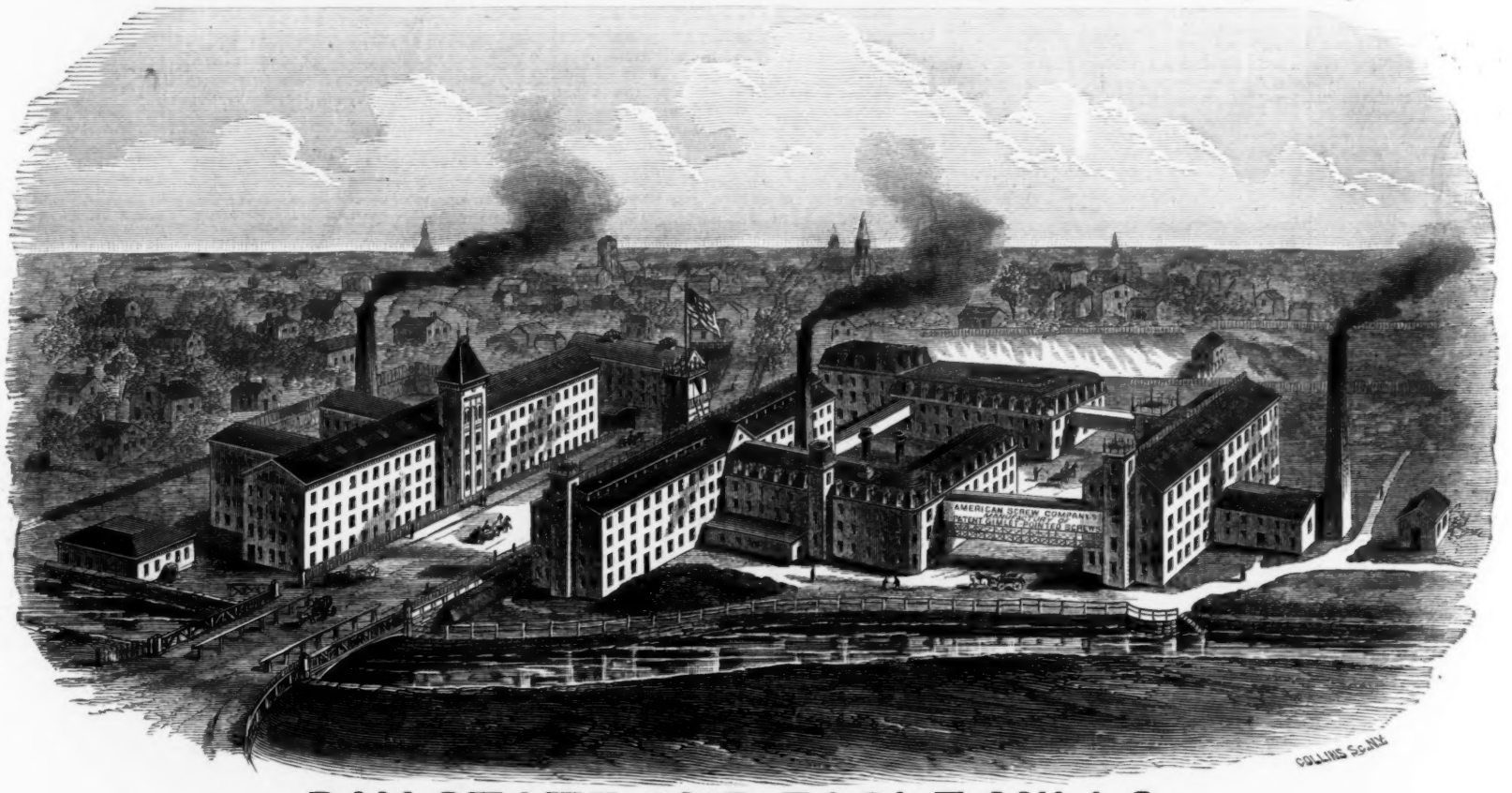
"A Pointed Wood Screw having the outer periphery of the thread upon its body cylindrical, while a portion of the body below the thread and near the neck is conical, the remainder of the body to the point being cylindrical, and yet having all the thread brought to an edge of a constant angle, without jogs in the paths between the threads, substantially as described."

On the opposite page will be found illustrations of the various Works of the company.



NEW ENGLAND MILL.

Containing Machinery for the Production of 22,500 gross of Screws per day.



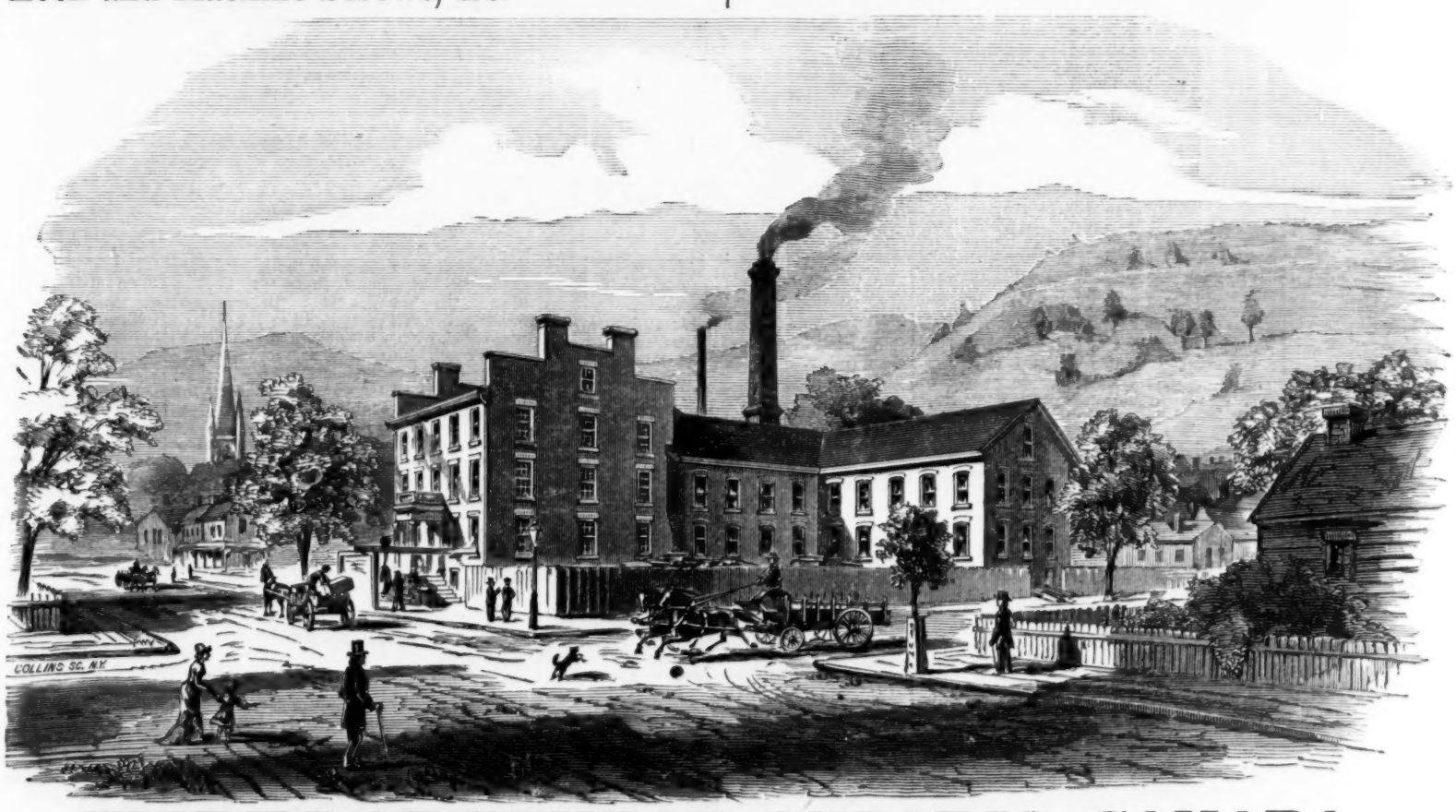
BAY STATE AND EAGLE MILLS.

BAY STATE MILL,

For the Production of Stove Bolts, Tire Bolts, Rivets, Lock and Machine Screws, &c.

EAGLE MILLS.

Capacity 22,500 gross Wood Screws per day.



WORKS AT DUNDAS, ONTARIO, CANADA.

Capacity, 4000 gross Screws per day.

National Association of Stove Manufacturers.

(Concluded).

The president said that he had requested Mr. G. F. Filley, of St. Louis, to prepare a paper to be read at this meeting. That gentleman then read the following interesting paper, which was received with applause:

Address of Giles F. Filley.

All the trades and industries are anxiously and impatiently asking how long the present ruinous depression, which began in 1873, is to continue. What is the cause of the extraordinary paralysis which has benumbed the tremendous productive agencies of the age, and produced such multiplied bankruptcies and so much suffering in the midst of such unexampled abundance? It is an interesting question. Indeed, it is the most interesting question of the day and age. It involves a social problem of the gravest difficulty and importance. Let us see what are the causes of the state of things complained of.

It was about one hundred years ago that Watt perfected the steam engine, which is the power that now moves the world. It was about the same time that Arkwright invented and perfected the machinery for spinning cotton and wool thread that now supplies the human family with good and cheap clothing. It was about the same time that Wedgwood discovered and perfected new methods for making earthenware. It was about the same time that the improved and cheapened processes for working iron was discovered. And it was about the same time that Count Rumford conducted his important experiments for supplying the race with cheaper and better food. The great controlling agencies of our civilization were brought into play at once, and set to work developing and applying force, turning machinery, making clothing, preparing food, instruments of comfort and pleasure, and supplying wants that had never been supplied before, and lifting the human race out of the rude condition of squalor and ignorance into its present condition of opulence and power.

The nations were exhilarated by the influence of these discoveries and inventions, and put forth efforts which, compared with all that have been seen before, were surprising. England, with the aid of the new machinery, began to supply her own people with better clothing, better houses, better food, and more comforts than they had ever possessed before.

But England's producing power soon outgrew the demands of her own people, and she went out to distribute her surplus products over the world, and the result is that wonderful aggregation of wealth which England and Englishmen now possess. Other nations imitated her example, and each successive year increased the number and the power of producing agencies, until about the year 1870, when the climax was reached. The task which the world had set out to do was done—and overdone. Since that year we have found out that our power to produce is greater than our capacity to consume, and the forced idleness of a large portion of our producing agencies, built at a heavy cost, has reacted in the derangement and bankruptcies we see and hear of in the great centers of industry and trade at home and abroad.

Some eight or ten years ago, at the hight of the apparent prosperity in Europe and this country, when all departments of industry were unusually active, an intelligent and observant Englishman made the tour of the world to ascertain the power of the steam machinery at work producing those things used by mankind in their daily life. The result of the examination is briefly summed up in these remarkable and prophetic words: "If," said he, "power and machinery shall continue to be increased and extended as it has been in the last thirty or fifty years, the time is not far distant when production will overtake consumption; and when that point is reached the commercial world will see greater distress than was ever known before." Is not the prophecy being fulfilled? Has not production already overtaken consumption, and is not the resultant distress to be seen all around us in the long and still lengthening record of insolvencies? The steam power at work in France does the work of 31,000,000 men. But Great Britain is far ahead of all the world in its possession and application of machinery. Its spinning machinery alone (Arkwright's invention) does the work of 40,000,000 persons, and it has been stated that its entire steam power is equal to that of 800,000,000 persons. Add to what Great Britain has done and is doing, what France, Germany, Denmark, Norway, Sweden and Belgium have done in the same field, add also what we, with our fierce and reckless activity, have done in this remorseless competition for markets—and ask yourselves if the work of production has not reached and passed its climax.

Early in 1877, Mr. Stephen Bourne, Fellow of the Statistical Society of England, read an elaborate paper on the rise and decline of the commerce of England from 1816 to 1877. The facts stated will be interesting and instructive to this Association. English imports in 1816 were $125,000,000, and exports $258,000,000. This excess of exports over imports was maintained for a period of 38 years, during which the aggregate excess was $8,000,000,000 (eight thousand million dollars), which have been added to the wealth of the country in the shape of profits. These great profits were kept up till the year 1870, when the books begin to show a change. From that year the imports exceed the exports, showing a decline of prosperity and a consumption of capital. During the last seven years her aggregate imports have exceeded her exports by about one-third. What this means I need not tell you.

In the last ten years the manufacturers of Massachusetts have increased 88 per cent., while its labor has increased 30½ per cent., showing that with the aid of machinery one person now does what it required three to do ten years ago. The spindle capacity of the New England State is equal to the work of supplying 80,000,000 population with the kind of goods made, while the home population to be supplied is only 40,000,000. Prior to 1788, before steam was introduced in France, 60 per cent. of its products represented labor and 40 per cent. material; at the present time the products represent 40 per cent. in labor and 60 per cent. in material; striking proof of the displacement of labor by machinery in a country that has less machinery, in proportion, than any other in the world. Mr. Carroll D. Wright, in a paper read before the Social Science Association, at Cincinnati, states that the products of 6,000,000 persons engaged in agriculture in the United States in 1870 were such that it would have required the labor of 25,000,000 persons to make them by the old system of hand farming in use thirty years ago.

Again, in 1872, this country imported about one-third of the iron used; in other words, we consumed all the iron we ourselves made, and half as much more besides; but five years later less than one-third of our own furnaces produced as much iron as was produced in 1872. Could any amount of statistics furnish a more startling illustration of the dissipation of capital going on around us than this simple fact?

It may be asked, what has all this to do with stove making? Let me answer the question by asking another: Can our trade hope to escape the common danger and demoralization that affects all others? Is the depression in our business the result of transcient causes, while the depression in all other producing industries is the inexorable result of causes wide, deep and permanent? We do not, perhaps, employ machinery to the same extent with other trades; but have we not accomplished the same end by undue extensions of our works and a multiplication of our foundries beyond the limit indicated by the wants of consumers? In other words, are we not either producing or able to produce more stoves than the country can consume?

Do we not feel the same disappointments that are experienced by other trades? Are we not governed by the same laws of supply and demand? The affirmative can be the only answer to these questions, and the only solution to the trouble is that we shall strictly adjust the supply to the demand when that demand can be ascertained?

Fifty years ago found our country almost devoid of cooking and heating stoves. Their great utility at once developed a rapid and universal demand—a demand that taxed the utmost capacity of manufacturers to supply. The enterprise was new and profitable, and this of itself brought capitalists to its aid. Commencing in the eastern portion of our country, the trade extended westwardly as population moved in that direction, which, with the facilities then at hand was soon supplied, and on the disappearance of slavery in the South, a new domestic, social and industrial condition was inaugurated, which demanded economical arrangements peculiarly favorable to our trade. In adjusting itself to this new condition the South made extraordinary demands for cooking and heating stoves to do the service which before had been performed by rude and wasteful labor, thus furnishing another example of the displacement of human muscle by machinery and improved implements.

It might be here stated that the real wants of the country were met, that there were no new fields to be opened, and as population did not continue to increase in proportion to the capacity to supply, it was not long before production exceeded consumption. Capacity increases while demand decreases, for it was clear that as soon as the households were once equipped with stoves the greedy demand would be sated, and henceforth limited to what were needed to make up wear and tear and the natural increase of population. Stoves are not the perishable fabrics that require to be replaced year by year, or even five or ten years, and no one presumes to buy two stoves when but one is needed; hence the trade must be limited to actual need. Another important feature in establishing what the country will demand of us is the rigorous economy that our people at present are bound to practice.

Have we not overlooked these important facts? Have we not taken the demand of 1870 and prior thereto for an expression of the normal needs of the country? And have we not enlarged our foundries and built new ones to meet it till our capacity has overreached our business? and is not the ruinous competition that now exists, and is not the undue and unwise ornamentation that is now practiced on our goods, the direct result of over-production?

It is fully apparent that if one-half the capacity to produce stoves were destroyed today, there would then be enough left to supply the entire wants of the country. Thus it has been that product was piled upon product until at last the fabric gave way, carrying with it the destruction that has befallen so many other enterprises. Here we meet with the fulfillment of the prediction of our English political economist, who declared that when production did overtake consumption we should see greater distress than ever before known.

I do not attempt to indicate the remedy for the grave trouble which I have suggested. It is sufficient for the present to show that the trouble does exist, and that it is neither trifling nor transient, but serious, and the product of active causes still at work and yielding every day its fruits of insolvency, idleness and distress.

The paper was listened to with great interest by the members, and referred to a committee of three—Messrs. Bradley, Sheppard and W. H. Tefft.

Mr. Grange Sard, Jr., in response to a generally expressed wish, made some remarks upon the subject of his recent visit to England and the Continent, and also in reference to American trade with Europe. He said that his trip had been a short one, and was taken wholly with a view to pleasure and not to business. He did not feel that he had any report to make—in fact, he had tried to banish all thoughts of business while he was away. He would say, however, a few words upon the subject of foreign trade. There had been much notice given to this lately, and manufacturers of some classes of goods seem to have run mad in seeking a foreign market. There certainly was a market for many American articles—articles of food, products of the soil, agricultural implements, sewing machines and labor-saving machines—but he did not think that there would be a large European demand for stoves. He did not think the Europeans took kindly to American stoves. The English were much prejudiced against them for many reasons. They are a conservative people. What served their fathers was good enough for the present generation, and there was also their love of open fires to combat. In France the duties were in the way, and also the different ideas of the French people concerning domestic economy. In Germany and other parts of the Continent the people were tied up to their old-fashioned porcelain stoves. The people who used these lived in much cooler houses than we do in America; they had an idea that excessive heat was opposed to physical vigor, and also think that iron stoves throw off poisonous gases. If it were possible to create a European market for our stoves, foreign makers would soon find a way to obtain American patterns, and could easily hold the trade. Coal, iron and labor—the chief items cutting into the cost of stoves—were all cheap abroad, and altogether the subject seemed surmounted by difficulties on all sides. There was little prospect that Europe would prove an outlet for our over-production. South America and Mexico were much more promising fields.

It was moved that Mr. Sard be requested to prepare a paper upon the subject upon which he had spoken.

Mr. Sard moved the appointment of a committee of three to report upon the subjects considered in the president's address. The Chair named Messrs. Sard, Myers and Thomas as such committee.

Mr. Sheppard said he attributed much of the success in the efforts of his committee with the House Congressional Committee to the effect of letters written by stove men throughout the country. He hoped to have the same cordial support from members of the Association in their efforts with the Senate Committee.

The Association then adjourned to meet at 11 o'clock Thursday.

The Second Day's Proceedings.

President Jewett called the meeting to order promptly at 11 a. m. on Thursday.

Mr. Grange Sard, Jr., chairman of the committee appointed to consider the president's address, reported as follows:

To the Members of the National Association of Stove Manufacturers—GENTLEMEN: The committee to whom was referred your president's address, notice with great pleasure the cheering news of the state of the stove trade taken therein—the facts that production has been restrained, the quality of the goods improved, our trade placed upon a substantial basis and the prospects of future success being brighter than of late has been the case—and they respectfully submit for your consideration the following resolutions:

1. The thanks of this convention are heartily awarded to S. S. Jewett, Esq., president, for his able address, which should receive the most careful and thoughtful attention of each member of this Association.

2. That while the outlook is more encouraging than it has heretofore seemed, yet the conditions of trade in general necessitate the most cautious procedure on the part of each manufacturer.

3. That it is our opinion there has not been an overproduction of desirable first-class goods, but that the surplus is mainly confined to stoves of inferior grades, which may be forced upon the market and necessarily restrict the sale of goods of a better quality.

4. That the prime cause of the low prices lately obtained is the forced sales made out of season, to which our attention has been called.

5. The members of this Association and business men generally are to be cordially congratulated upon the repeal of the bankruptcy act, which will aid greatly in restoring confidence in commercial circles.

6. This meeting heartily adopts the views of the president on the effect of the "personal contract" of the members of this Association, and they believe that to such contract in a great degree is to be ascribed the improved prospects of their trade, the united action taken on the effort to repeal the bankrupt law, and especially the improvement in the character of our manufactures.

7. The system of contracting convict labor, as at present existing in several States, is pernicious and demoralizing to the last degree, and we earnestly request the strongest efforts of each member of this Association, both singly and in combination, toward its abolition.

8. That we notice with great joy the fact that the innate modesty and perfect truthfulness of the stove founders of this great and glorious country have at last been so apparent as to merit the approbation of one of its most prominent members, and we hereby pledge ourselves to endeavor to grow in grace in this direction, each seeking the other's welfare and not his own, believing that in this life virtue is its own reward, and has no other.

GRANGE SARD,
R. P. MYERS,
D. M. THOMAS.

The report was adopted.

Mr. Bradley, chairman of the committee appointed to consider Mr. Filley's address on overproduction, reported as follows:

To the National Association of Stove Manufacturers of the United States.—GENTLEMEN: Your committee to whom was referred the paper read by Mr. Filley before the Association yesterday, would respectfully report that they have given the subject therein treated as much consideration as the limited time would admit. We commend the views of Mr. Filley, and trust they will have the careful consideration of all the members of the Association. In the opinion of your committee the capacity to produce stoves and other articles of our manufacture at the present time is greater than the requirements of the country to consume. We recognize the fact, however, that a large number of the foundries have for many months past been running only from half to two-thirds of their capacity. We believe, moreover, that the present foundry capacity for the manufacturing of stoves is sufficient to meet the demands of the country for many years to come. Your committee are unable at present to see any practical mode of regulating production, other than demand and supply; less liberality in extending credits by the manufacturers, and closer collection of accounts would assist materially in placing our branch of industry upon a more secure and prosperous basis. We are convinced that one of the greatest evils in our whole commercial system is that credit is too cheap. Merchant and manufacturer alike have taken too great risks in placing their goods. With the repeal of the bankrupt law we hope a great personal responsibility will be felt, and mere adventurers in business without capital will be unable to obtain credits and settle at ten or fifteen cents on the dollar, and continue in business to repeat the operation, to the great damage of his neighbor who pays 100 cents on the dollar, and also to the loss of the manufacturer. We believe it would be of advantage to the trade to have a committee appointed to gather and collate statistics as to the capacity of production and the number of stoves sold, say, for five years past, and such other information as the committee might deem advisable, and report upon the same at the next annual meeting. Your committee offer the following resolutions:

Resolved, That the thanks of this Association be and are hereby tendered to Mr. Giles F. Filley for presenting to the Association the valuable paper submitted to us.

Resolved, That a committee of three be appointed to gather and have put in convenient form for the use of the Association, such information as they may be able to obtain as to the productive capacity for manufacturing stoves and other articles in our line of trade, and also the number of stoves, heaters and ranges sold by manufacturers each year for the five year last past, together with such other information as they may deem of interest, and to report the same to the next meeting of this Association, and that an appropriation be made from the funds of the Association to pay for clerical service necessary in preparing their report.

A. BRADLEY,
ISAAC A. SHEPPARD,
W. H. TEFFT,
} Committee.

The report was adopted.

After further discussion of matters of interest chiefly to members, the Association adjourned to meet in Rochester, N. Y., January 16, 1879.

Steel as a Material for Car Axles.

The following article was sent to the Committee on Axles of the Master Mechanics' Association in response to their published request for information, but was not received by them until after the convention. It is now presented as supplementary to the committee's report, and is valuable as giving the argument in favor of steel axles:

MIDVALE STEEL WORKS, NICETOWN, PHILADELPHIA, May 16, 1878.

In answer to a card published in the *Railway Purchasing Agent*, asking for information concerning steel axles, and signed with your names, we take pleasure in placing before you some of the facts which have come to our notice in this connection, and our views upon the subject of steel as a material for car axles. We would premise by saying that we include under the general term of "steel," the slightly carbonized products of the Bessemer and open-hearth processes, which are sometimes called "homogeneous iron," or "ingot iron," and that in speaking of "iron," we mean masses of that metal welded together, as puddled iron, or blooms from scrap. This distinction points to an essential difference between the two metals, which seems to us to be of especial importance in considering them as materials from which to make axles. Iron made of small masses welded together is never, strictly speaking, homogeneous. There are always more or less imperfect welds, resulting in seams, and a lack of uniformity in the mass. Every seam is a crevice filled with cinder, or oxides of iron, of a different degree of hardness from the iron which surrounds it. In turning up the journal of an axle, or in wear, these seams are exposed, and the journal then becomes more or less a milling tool, cutting the bearings with edges formed at the seams. The cinder, detached from its place, as a grit, has also a cutting action. In case of metal which is poured fluid into a mold, and sets as one mass, the conditions are very different. We are able to regularly produce ingots of mild steel from the open-hearth furnace which, upon being cut in two, show no traces of cinder or blow-holes, or anything to interfere with actual homogeneity throughout the mass. These ingots, when hammered into axles, will sometimes show surface seams due to the roughness on the outside of the ingots, which, elongated in the forging, become surface scorings; but when the journals are turned up the surface that is to revolve against the bearings is continuous, and should never wear rough unless cut by grit introduced from without or imperfect bearings. These considerations, perhaps more than greater hardness or greater strength, have determined those railroad companies which have thoroughly tried steel axles to permanently adopt them. I am informed that the actual statistics of wear of axles and boxes warranted the use of steel when the relative prices of this metal and of iron were much more disproportionate than at present.

We would suggest that there is an advantage in having the manufacturer rough-turn the journals and collars of axles before they are shipped. We have done this in case of many thousands of axles, and in cases in which it has been done we have never had an axle returned to s as seamy on the journal, as any seam which failed to turn out condemned the axle before it left the works. The question of strength and hardness should be considered in connection with each other, as toughness is an important factor in the strength of an axle, and toughness is not to be obtained with extreme hardness. We are not prepared to give a decided opinion as to whether a maximum hardness, with sufficient toughness to insure safety, does or does not give the best results in wear. It depends undoubtedly a great deal upon the nature of the bearings; and the question of what relative hardness is most desirable in two different metals presenting bearing surfaces to each other is one which scientific experts, or men having practical opportunities for testing the matter, must decide. We incline, however, to the belief that an axle should be decidedly harder than ordinary iron. It should certainly be much tougher or less liable to break under shock or torsional strains. Our customers have submitted many hundreds of our axles to tests under falling weights, which, it is safe to say, no iron axles will stand, and we have never had reported to us a case of failure to come up to the specifications, nor do we know of one of our axles having broken in use. The manufacture has been reduced to so much certainty that in testing a 4-inch rod bar under a drop from each heat cast for axles we have gone for months without having to condemn a heat upon the proof, although the hardness of our axle material has been steadily increased. We inclose an account of comparative tests between iron and Midvale steel axles, made before a committee of the Association of Master Mechanics. The difference in the strength and toughness of iron as compared with mild steel is further illustrated by the results obtained in breaking bars in the testing machines. Taking "Lowmoor" iron as representative of the best iron produced, we find a tensile strength equal to 56,220 lbs. per square inch, and a stretch (represented by the elongation under strain of the 4 inch (long) specimen pulled) equal to 26 per cent. Where, as in this instance, and in the case of such mild steels as we use for axles, we find a good tensile strength in connection with a good stretch, we regard the figures expressing the tensile strength as indicating the hardness, and consider the percentage of stretch a measure of toughness. It is to be borne in mind that axles are not commonly made of "Lowmoor" iron, but of how much inferior material can be judged by comparing the price of that article with ordinary iron axles. We will take the above figures, however, as representing the best iron attainable, and say it is required to have a steel which will show an equal stretch. We find that the tensile strength which corresponds rises to over 70,000 lbs. per square inch. In 208 casts of six tons each, tested at these works, the average tensile strength equals 72,800 lbs. per square inch, with an average stretch of 25.8 per cent. This combination of strength and toughness enables a steel bar to withstand repeated shocks, so as to outlast an iron bar of the same size from four to six times, as we are willing at any time to demonstrate under our drop, any person interested furnishing the iron to be compared with our steel. It may be urged that the above experiments do not tally with the experience of some railroad men who have tried steel axles. To this we would say that the uncertainties of making mild crucible steel are very great, and that testing one piece of such steel is not conclusive as regards other pieces melted from the same mixture, but that a test from a heat of open-hearth metal represents the remainder of this cast; and where manufacturers will take the trouble to prove the quality of all their metal before they ship it to consumers, the open-hearth process, as now perfected, enables them to guarantee it with entire certainty. We would say in conclusion that we have recently at these works arrived at the uniform production of a steel for axles which shows a tensile strength of 85,000 pounds per square inch, with 22 per cent. stretch, and which is guaranteed to stand any drop test specified by a railroad company which has come to our notice. This material, having the above physical qualities, and able to stand great abuse under the drop, we believe to be that which, all things considered, is most suitable for axles. Respectfully yours,

CHARLES A. BRINLEY,
Sup't Midvale Steel Works.

A Large Gun Casting.—An enormous tube of cast iron, which is to form part of a breech-loading gun weighing 100 tons, has been recently successfully constructed in the foundry of the Italian government, near Turin. The diameter of the bore of this modern piece of ordnance will be 16 in., the weight of the projectile thrown by it will be 1000 kgs., or very nearly one ton; and the charge will consist of 250 kgs., or about 5 cwt., of power. The cast-iron part of the gun, which alone weighs more than 60 tons, will be strengthened by rings of steel. The iron used was melted in 11 large furnaces, situated at some distance from one another, and then conveyed into a large receptacle, specially constructed for the purpose near the place where the form was arranged. This latter consisted of a cylinder of cast iron, lined with a thick layer of perfectly dry earth; while the core was formed by a hollow iron cylinder coated with clay, through which a stream of water flowed. Four tubes led from the receptacle in which the molten iron was collected into the form; the one entering this latter near its base, another near the top, and the others at intermediate points. The heating of the furnaces was begun at 3 o'clock in the morning; at 10 the molten iron was conveyed into the great receptacle, an operation which was performed in 35 minutes, and in less than half an hour afterward the casting was completed, not a single hitch or accident of any kind having taken place during the whole work. When finally completed, the gun will be rather more than 30 ft. in length, and the diameter of the breech where it will be strengthened by the steel rings will be about 6 ft.

The choice woods of America might be disposed of in England to a much greater extent than at present if energetic steps were taken to introduce them. Black walnut is seldom if ever seen in furniture or household furnishing. Hickory is imported in the form of carriage spokes and hubs, but the equally desirable ash and second growth of white oak are but little used; in short, the great variety of wooden household articles which are so common in this country, and which are classed under the general head of "woodenware," are but little known in Great Britain, and it is thought that a trade could be advantageously established in these articles.

B. KREISCHER & SON,
New York Fire Brick &
STATEN ISLAND
CLAY RETORT WORKS,
Established 1845.
Office, foot of Houston Street, East Rever,
NEW YORK.
The largest stock of Fire Brick of all shapes and sizes on hand, and made to order at short notice.
Cupola Brick, for McKenzie Patent, and others. Fire Mortar, Ground Brick, Clay and Sand. Superior Kaolin for Rolling Mills and Foundries. Stone Ware and other Fire Clay and Sand, from my own mines at New Jersey and Staten Island, by the cargo or otherwise.

NEWTON & CO.,
Successor to
PALMER, NEWTON & CO.,
ALBANY, N. Y., Manufacturers of
FIRE BRICK
Stove Linings,
Range and Heater Linings
Cylinder Brick, &c., &c,

M. D. Valentine & Bro
Manufacturers of
FIRE BRICK
And Furnace Blocks
DRAIN PIPE & LAND TILE.
Woodbridge, - - - N. J.

A. HALL & SONS, Perth Amboy, N. J.
ESTABLISHED 1846.
HALL & SONS, Buffalo, N. Y.
ESTABLISHED 1866.
FIRE BRICK
of reliable quality for all purposes, manufactured o the best New Jersey Fire Clays. Also, Architectura Terra Cotta, Fire Clay, Fire Sand, Kaolin, Ground Fire Brick and Diamantine Building Brick.

Brooklyn Clay Retort
AND
FIRE BRICK WORKS.
Manufacturers of Clay Retorts, Fire Bricks, Ga House and other Tile, Cupola Brick, &c. Dealers in and Miners of Fire Clay and Fire Sand. Clay bank at Burt's Creek, New Jersey. Manufactory: Van Dyke, Elisabeth, Richards and Partition Sts., Brooklyn, N. Y. Office No. 88 Van Dyke St.

Watson Fire Brick Manufactory
ESTABLISHED 1836.
JOHN R. WATSON, Perth Amboy, New Jersey.
Manufacturer of
FIRE BRICK,
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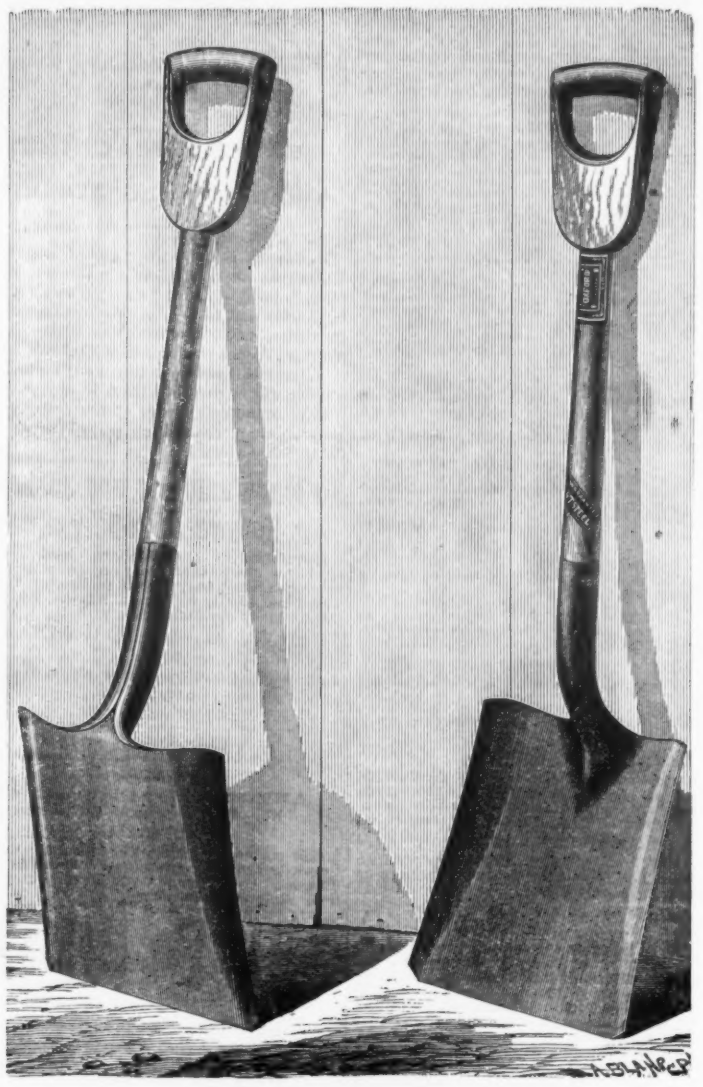

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Solid Cast Steel Shovel.
OIL TEMPERED.

The Oxford Patent Welded Solid Cast Steel Shovel, as now furnished by us, is a new article of manufacture, of a single plate of Cast Steel, without rivets, welded by the Antrim process, with smooth surfaces front and back, and with socket continued some distance up the handle, completely encircling it in the manner of a ferrule, thus insuring a perfectly straight handle in every instance, and securing the qualities of absolute perfection of strength, and the greatest beauty of construction possible. Taken altogether, our methods will be found to obviate all the defects now so patent in all other Shovels, even those of first-class manufacture, and we will guarantee for them superior strength in parts usually the weakest, perfect symmetry and regularity of appearance, and wearing quality one-third greater than those of any other now made.

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Goods of this stamp are made of the very best material, and are warranted. We will always replace them with new ones in every case where reasonable satisfaction is not given.

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Scientific and Technical Notes.

In the *Popular Science Monthly* a very interesting article, written by Prof. John Tyndall, gives an account of some

RECENT EXPERIMENTS ON FOG SIGNALS.

Starting from the fact that a 5½-inch howitzer firing 3 pounds of powder will yield a louder report than a long 18-pounder with the same charge, a series of experiments were made with guns provided with muzzles of various kinds, which proved the efficiency of a parabolic muzzle. Finding that fine-grain powder produced a sound of more intensity than pebble powder, it was argued that with the rapidity of combustion the loudness of the report would grow. The substitution of gun-cotton for powder proved this to be correct. Then a howitzer was pitted against gun cotton detonated in the focus of a cast-iron reflector, and in free air, which demonstrated the superiority of the gun cotton parabolic muzzle gun. As regards the comparative merits of gun cotton fired in the open air and detonated in the gun, it was found that for certain cases when the sound was to be transmitted in all directions, the former practice was preferable. Practical difficulties connected with the introduction of these methods led to the introduction of the gun cotton rocket. A disk of gun cotton is placed in the head of a rocket and is ignited at a hight of about 1000 feet by means of a fuse. This was proved by a long series of experiments to be the most valuable means of signaling at long distances which it has as yet been possible to devise, as it combines great effectiveness with easy and rapid manipulation, and at the same time permits extemporizing a fog signal station at any point upon the coast where its establishment might be desirable.

Mr. Conrad W. Cooke has recently designed a

TELEPHONIC ALARM

for attracting attention at distant stations of a telephonic circuit, based upon the fact that when a voltaic current is either made or broken a click is heard in a telephone. The instrument consists of a brass wheel centered to an upright bracket attached to a stand, capable of being rotated. Against the edge of this wheel, which is milled, a light metallic spring presses, so that when the wheel is turned a vibratory current is produced, both the spring and wheel being included in the circuit of a battery and telephone. In order to prevent the battery ever being left by mistake in connection with the telephone line, the instrument is provided with an ordinary electric bell push or transmitting key, the connections of which are so arranged that the battery and wheel are cut out of the circuit unless the button is pressed, as in the act of ringing an electric bell. In order to call attention at a distant station, all that is necessary, therefore, is to press down the button with the left hand and give a turn to the wheel with the right. The advantage of this instrument is that it dispenses with the use of a signal bell or any special signaling wire, the telephone itself being made the sounding apparatus.

At the last meeting of the North Staffordshire Mining Institute, at Stoke-on-Trent, Mr. J. Williamson introduced

A NEW SAFETY LAMP,

which combines the advantages of the Stephenson and the Clanny lamps. It affords a light superior to that of the Clanny lamp, and is not so easily extinguished when exposed to air traveling at high velocity, while, if plunged into a body of gas, it is extinguished before sufficient heat is generated to harm the lamp. It contains two glass cylinders, one external and similar to the Clanny, and the other internal and similar to the Stephenson. The gauze is similar to the Clanny, but without the cap. The internal glass is capped with a perforated copper or gauze cap, and is similar to the Stephenson. The air is admitted through a perforated portion of the bottom part of the lamp, and the inner ring is arranged to carry the two glasses, and when screwed up, the lamp being in working order, the cap of the inner glass is pressed gently against the top of the gauze. The air is made to pass through the bottom part of the lamp, and through the gauze fixed on the periphery of the inner ring, and into the flame.

Mr. John Eckart, of Munich, claims to have discovered a method for the

PRESERVATION OF FISH

in a fresh state by salicylic acid. His plan of procedure consists in impregnating fish by means of hydraulic pressure with a weak solution of salicylic acid, packing them in casks or cases, and pouring gelatine over them. The latter serves to prevent their becoming stiff and dry. Prepared and packed in the above manner they may, it is said, remain from 10 to 15 days, and even longer, *en route* without detriment to their flavor or appearance; and Mr. Roosen, of Hamburg, who is turning this new system of preservation to practical account has received the most satisfactory reports respecting his consignments of fresh and salt water fish to distant countries. Trout caught near Munich, and treated according to Mr. Eckart's plan, arrived, it appears, at Bergen in Norway and in New York in a perfectly fresh state.

A recent number of *La Nature* contains drawings and a description of

LAURENT'S NEW SACCHAROMETER.

The light from a fixed monochromatic yellow flame is passed through a diaphragm containing a plate of bi-chromate of potash, which absorbs the violet and blue rays. The yellow rays which pass it fall on a bi-refracting prism which turns on the longitudinal axis of the instrument, and in which the second image is diverged to one side and intercepted by diaphragms. One of these carries a thin plate of quartz parallel to the axis, which covers only one-half of the diaphragm. Its thickness is one-half wave for the yellow rays. Between this diaphragm and a second one the testing tube containing the sugar solution to be tested is placed. In front of the second diaphragm is the Nichol analyzer, an objective and a concave eye-piece. The latter three parts inclosed in a tube revolve, the angle through which they move being indicated on an alidade.

Schutzenberger has recently called the attention of the Academy of Sciences to an

ALLOTROPIC MODIFICATION OF COPPER.

The following are the conditions under which it is produced: A solution of 10 per cent. of acetate of copper previously boiled to expel a little acid and render the bath basic is submitted to electrolytic decomposition. The electrodes must be about 1.2 to 1.6 inches apart, the negative platinum pole being made somewhat smaller than the positive copper pole, both being parallel plates. The flat surface of the negative pole facing the copper pole will then be covered by a beautiful deposit of allotropic copper, while at the opposite surface a much finer deposit of ordinary copper will be found. The following physical properties distinguish the metal thus obtained: Its color is less red, approaching that of certain bronzes, while its density, as determined by a rough trial, is nearer 8 than 8.9, that of ordinary copper. Among its chemical characteristics are that instead of evolving bi-oxide of nitrogen when treated with nitric acid, protoxide of nitrogen is formed, a blackish green layer of unknown composition being deposited. Mr. Schutzenberger has satisfied himself that these special properties cannot be attributed to a hydrogen compound of copper, nor to hydrogen mechanically inclosed. They can only be accounted for by assuming the existence of an allotropic state of the metal.

Mr. R. J. Nunn calls the attention of electricians to the use of

ANTIMONY AS A NEGATIVE ELEMENT

to replace carbon in some galvanic batteries where sulphuric acid is used as the exciting fluid. He mentions among its advantages its cheapness, the absence of scaling and disintegration, and the fact that galvanization begins almost immediately on immersion. He overcame the brittleness of the proposed substitute by casting it on a core of copper.

THE COMPOSITION OF TULA SILVER,

which was long kept a secret, has been discovered at last. It consists of nine parts of silver, one part of lead, and one part of bismuth. The metals, in the proportions stated, are melted together. The addition of sulphur gives the beautiful steel-blue tint for which it is so highly prized.

A new and valuable method of

FASTENING TIRES,

invented by Mr. Kaselowsky, a German engineer, has successfully stood the test of a series of experiments. A dove-tailed groove is turned in the inner face of the tire, and a similar one in the outside of the skeleton, so that, when the tire is slipped on, the two come opposite to each other and form a channel of dowel-shaped section going all round the wheel. Into this channel is run some easily fusible metal (by preference pure zinc), which, on cooling, makes a firm connection between the tire and wheel. In carrying out the operation the tire is only slightly heated, a shrinkage of 1-1200 being found ample, and is then brought over the skeleton, which is laid in a horizontal position, and forced upon it. The zinc is then immediately run in through holes cast in the skeleton, if of cast metal, or drilled in other cases; thus the zinc is at once prevented from cooling while being run in, and is compressed, and thus rendered much stronger, by the subsequent contraction of the tire. That this mode of fastening, in addition to its simplicity and cheapness, offers full security, both against sideways shifting and in case of breakage of the tire, has been proved by experiments made in the central workshops at Frankfort.

E. Schrabetz has supplied a long-felt want by his invention of a simple

MACHINE FOR BENDING RAILS,

which has proved to be very effective in numerous cases. Six rails are laid on a platform alongside each other, the first of the six being the one to be bent, while the five others serve as a fulcrum or foundation for the work. First, both ends of all the rails are fastened together by a U-shaped clip, which passes over the outside of the sixth rail, and has a lug cast on its inner edge which fits into the bolt hole of the rail and thus prevents its slipping. The two branches of the U are then screwed together behind the first rail by a bolt. The ends of all the rails being thus rigidly connected, lateral slipping is avoided by a number of small chocks which fit into the flanges of the rails and are placed between them, each chock having an eye through which a bar can be passed for convenience of inserting or extracting it. At a distance of about 3 feet from either end a small machine, resembling and constructed on the same principle as a bottle-jack, is then inserted horizontally between the fifth rail and the one to be bent. It is clear that when the bottle-jacks are turned by a forged hooked lever, specially made for the purpose, their heads will force the outer rail out, and as its ends are secured they will bend it to a curve.

F. Lenent describes a new

PUDDLING FURNACE,

now building at Clos-Mortier, Saint-Dizier, France. He passes the air for the combustion of the fuel through channels below the hearth and along the sides of the furnace, whereby it attains a temperature of 800° F., sufficient to melt zinc in a few minutes. This hot air is led below the grate, where it contributes to increase the intensity of the combustion. In order to cool the grate-bars and aid in transferring the heat to the hearth of the furnace proper, superheated steam is also passed below the grate. An economy of fuel cannot be reached by the dissociation of the steam.

Several years ago a party of enterprising explorers discovered among the hills in North Wales, which at some period had been the bed of a lake, a very peculiar deposit of silica that had been thoroughly calcined by some volcanic agency and then precipitated. There are two well defined strata of this silica, the upper one being the finer. This silica has been analyzed by several chemists including Prof. Flageolet, who gives the following results:

Silica	79
Water	13
Oxide of Iron	3
Alumina	4
Magnesia	1
Total	100

Mr. Thomas A. Griffiths of Liverpool conceived the idea of using this silica as a base-

for the manufacture of paint, as it possesses the fine, impalpable consistence so much desired in anything intended for incorporation with paint, and his experiments demonstrated the great advantage it possessed over paints having a white lead basis. After suitable preparation the silica is incorporated with oil and coloring matter, making what is known as

SILICATE PAINT.

This paint is said to be an excellent preservative of iron and metal surfaces, and is especially recommended for iron bridges and boilers, ships, lighthouses, girders and fronts. Paints with metallic bases are often found to be powerful corrosives of metals. Sometimes the corrosion is caused by chemicals used in the preparation of the oils. In the case of lead paints it results from the lead itself. Zinc as a base acts with the oils in destroying the coating so far as to give full play to atmospheric agencies. Wood suffers whenever humidity can reach it, and requires for its preservation a coating thoroughly sound and impermeable. The claim made for silicate paint is that it has no chemical action upon metal, and, owing to its peculiar qualities, prevents corrosion and does not discolor or become dingy like other paints, owing to their faulty composition, gases, heat and the moisture absorbed holding the dust. As compared with white lead the first cost of the silicate paint is somewhat greater, but it is said to be cheaper per square foot of painted surface. It is non-poisonous, permanent in color, of good body, damp proof, and suitable for interior decoration or the most exposed out-door wear. It has been six or seven years in use in England and elsewhere, and has been introduced into this country by Howard Fleming, of 10 Pine street, N. Y. A variety of this paint termed enamel is found exceedingly useful for ships used in the salt-carrying trade. Formerly these vessels were cemented internally, in order that the damp salt might exert no prejudicial influence on their plates. It has since been found that a coating of enamel is quite as efficacious. Dilute acids have no effect on these compositions, and although hot caustic alkalies can be made to affect them; this is treatment which is seldom likely to be applied. The chief inspector of mines of Victoria, New South Wales, in a report to the Minister of Mines says: "The best means of preserving the wire rope from the corrosive action of the mineral waters is painting the ropes with silicate paint." This protective quality adapts these paints to all hydraulic machinery, and so well will they stand friction and so smooth is their surface that Mr. Frank E. Houghton of the Engineers' Department, Metropolitan Board of Works, says: "I use your silicate enamel paint for covering the bright wrought-iron pump rods and such like ironwork in the engine house, which is affected seriously by the gases and acids emanating from the sewage pumped, discoloring and spoiling white lead paints in a few weeks." For the metal tubing now being used for the casing of shafts to a considerable depth, and indeed for ironwork in all situations, this paint provides a handsome coating that is very desirable.

From the English patent of Mr. Thomas W. Webb, it appears that

IRIDESCENT GLASS

is produced by the action of volatilized chloride of tin upon the surface of the glass. To give greater depth to the color or tints, nitrate of barium and strontium is used in small proportions. By this patent the glass is not reheated, but the iridescence is produced during the manipulation of the article when in the hands of the blower, and while on the punty.

M. Reznier has communicated to the French Academy of Sciences a description of

A NEW ELECTRIC LAMP,

drawing its light from incandescent poles and acting in free air. A thin rod of carbon, pressed laterally by an elastic contact and pushed in the direction of its axis against a fixed contact, becomes incandescent and burns when traversed by a pretty strong current. As the end of the rod is consumed the pressure urges it forward through the elastic slides to the point of fixed contact, where the combustion takes place.

In order to facilitate the work of divers by supplying them with a

SUBMARINE LAMP,

Barnet and Foster compress oxygen to 30 atmospheres in an iron cylindrical reservoir, from which the combustion of an alcohol lamp is sustained. The escape of the gases generated is provided for.

Boisbaudran has ascertained the

EQUIVALENT OF GALLIUM

both by calcining gallo-ammoniacal alum and by calcining nitrate of gallium produced from a known weight of the new element. The results of his researches fluctuate between the extremes of 69.66 and 69.97, the average being 69.82.

Some experiments made by Dr. Heintzel on the

INFLUENCE OF LIGHT UPON CEMENT

were recently published in *Dingler's Polytechnic Journal*. Dr. Heintzel divided a quantity of cement into three parcels, exposing parcel A to the air and full light, B to the air and diffused light and secluding C in darkness from the air. After six months he found that A made a weak mortar by absorbing 38 per cent. of its weight in water and that it had a tendency to crumble; B, with 33⅓ per cent. of water, made a mortar which was too adhesive to the trowel, and it yielded up none of its weater; C, with 33⅓ per cent. of water, made an excellent mortar, easily stirred and flowing, and it relinquished some of its water. After setting for 28 days the relative strength was: A, 3; B, 37.9; C, 44.6.

John Zeltner, of Nürnberg, Germany, manufactures

RED ULTRAMARINE

by heating ultramarine violet to 270° to 300°, and exposing it to the action of nitric acid fumes of varying power. Very concentrated acid yields a light rose color, while a deeper and darker shade of red is produced by diluted acid.

Special Notices.

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They represent foreign brands of
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Owing to the removal to the Works of our resident partner, Mr. T. M. Jones, we will sell the stock, good will and fixtures of the Iron and Heavy Hardware Business now conducted at Milwaukee, Wis., as a branch of the American Iron Works, Pittsburgh. The business is well established, and the stock of iron, nails and heavy hardware is of the best quality, having been manufactured at our works and selected with the greatest care for the trade. This affords an excellent opportunity for any parties desiring to engage in a thoroughly organized and prosperous business in a favorable locality.

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At Less than One-third their Cost, or for the Amount of the Incumbrance.

The property takes in 4¾ acres of ground on the south branch of the river, adjoins the Union Rolling Mill Co., has tracks, connections and Nicholson pavement to the gate. The ground alone is worth more than the whole works complete can now be bought for. Liberal terms given to responsible parties. Works all ready to start.

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Will remove about the 5th of July to the large store, No. 83 Chambers and 65 Reade Streets, lately occupied by Messrs. Walsh, Coulter & Flagler. Consignors will please send all of their goods to above address after the 8th of July.

JULY LIST, No. 1.

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Two Woodruff & Beach Steam Engines, automatic cut-off, cylinder, 20 inch diameter, 48 inch stroke.
One Fishkill Landing Machine Co. 16 in. x 36 Horizontal Steam Engine, with slide valve and cut-off.
One Portable Engine, 7 in. cylinder.
One No. 3 Stiles Geared Press.
One No. 2 Fowler Press.
One Crank Planer.
One 300 lb. Drop Hammer.
One Sellers 500 lb. Steam Hammer.
One 600 lb. Drop Hammer.
One Hand Milling Machine.
One "Pond" Index Milling Machine.
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Two Engine Lathes, 13 in. swing, 6 ft. bed.
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One Engine Lathe, 22 in. swing, 16 ft. bed.
Three Engine Lathes, 20 in. swing, 8 ft. bed.
Two Engine Lathes, 22 in. swing, 8 ft. bed.
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One new "Hardaway" Bolt Heading Machine, to head up to ⅝ in. bolts.
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(A copy can be examined in "The Iron Age" Exhibit at the Paris Exposition).

OPINIONS.

NEW ALBANY, IND., April 23, 1878.
Mr. S. H. Jennings: DEAR SIR.—Please let us know if we can procure "Jennings's Combination Discount Tables" in any city near here. We wish to examine it previous to purchasing. If you would like to send it C. O. D., you paying charges, with privilege of examination before taking, you may send one.
Yours truly,
TERSTEGGE, GOHMANN & CO.,
National Stove Works.

NEW ALBANY, IND., April 30, 1878.
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TERSTEGGE, GOHMANN & CO.

NICHOLS, TIOGA CO., N. Y., May 9, 1878.
I am very much pleased with the Tables. They are a great saving of time and labor, and I take pleasure in recommending them to others.
ALEXANDER A. SWINTON.

ROCKFORD, ILL., May 20, 1878.
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One 14 in. x 30 in. Whitehill & Smith Adj. Cut-off Engine, Wheel 10 ft. diam., and
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One 10 in. x 24 in. Fishkill Landing Engine, and
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One 10 in. x 24 in. Harris Corliss Engine, with Boiler, Pump and Heater, never run, price very low.
One 26 in. x 17¼ ft. Engine Lathe, Rod and Cross Feed.
One 22 in. x 16 ft. Engine Lathe, Pond; all improvements. Two 15 in. Pratt & Whitney Engine Lathes, with Taper Attachment. One Lincoln Gear Cutter, nearly new. Two Lincoln Milling Machines. Four Brainard Milling Machines. One each 1, 2, 3 and 4-spindle Drills, Pratt & Whitney. One No. 6 Root Blower. One 850 lb. Merrill Drop Hammer, good as new. 70 feet 22 in Double belt. 58 ft. 10 in. Double Belt.

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and with prices and particulars of the machines; also send mail samples of the nails made.

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The undersigned, in view of the **Paris Exhibition** of 1878, begs to inform his friends that he continues to make translations of Catalogues, Prices-current, Circulars, Correspondence, &c., from and into the

ENGLISH,
FRENCH,
GERMAN
and **SPANISH,**

and that he bestows special attention upon a strictly correct rendering of **Technical Expressions** in matters relating to **Machinery, Metallurgy, Hydraulics,** &c The very best reference will be furnished from leading manufacturers in this city, Philadelphia and elsewhere, for whom he has translated. If desired, estimates will be procured for the setting up, electrotyping and printing of catalogues, &c., in the above languages. **C. KIRCHHOFF,**
Metal Reporter of The Iron Age,
83 Reade St., New York.

Special Notices.

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Supplies nearly every class of Goods,

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SEWING MACHINES
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Manufacturers and Jobbers, having surplus stocks or goods that from any cause are unsaleable upon which they wish to realize, or assignees who have stocks to dispose of, will find a cash purchaser by communicating with.

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AMERICAN HARDWARE CO.,
No. 9 WILLIAM STREET, MELBOURNE,
AUSTRALIA,
Solicit correspondence with American manufacturers desirous of representation in the Australian Colonies. Consignments will have prompt attention. References furnished.

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Half Leather, $10.00. Full Leather, $12.00.

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Large Punch and Shears, 12,000 lbs., will punch 42 in. to center; two small Punches and Shears; 16x4½ feet Planer; Lathes, Drills and Machinists' Tools of all sizes; a large lot of Architectural Ironwork Tools; Wood-working Machinery; Tanks of all sizes; Hydraulic Presses; Steam Engines and Boilers of any size, from 5 to 500 horse power, and Pumps of all sizes and makes at less than one-half cost and as good as new. **JOHN CARROLL,**
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SITUATION WANTED—AS BOOKKEEPER OR Traveling Salesman. Have had nine years' experience in the above positions in the Hardware Business. A 1 references furnished. Am not afraid to work and willing to make myself useful. No objection to going to any place offering a permanent situation.
Address W. B. G.,
Office of *The Iron Age*, 220 South 4th St., Phila., Pa.

WANTED,—A SITUATION AS TRAVELING Salesman in the Iron, Steel or Metal trade. Have an extensive acquaintance with manufacturers, machinists, &c., throughout the United States. Can give first-class references, having had nine years' experience as salesman. Salary expected moderate. Address **A. F. W.,**
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HALSEY & MILLET,

Auctioneers and Commission Merchants
112 Chambers St., New York,
Solicit from manufacturers, importers and jobbers consignments of Hardware, Cutlery, House Furnishing Goods, &c. &c., for their regular weekly sales.
JAMES E. HALSEY, formerly of J. E. Halsey & Co.
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9 Pemberton Square, Boston, Mass.,
Issue Licenses to use the Process for the Manufacture of Iron and Steel
In the Bessemer Converter, Crucible, Siemens-Martin, Puddling, Blast and Cupola Furnaces.
The use of this Process improves the quality of the product, saves fuel and labor, and does not require any change in furnace or manner of working.
See page 17 of *The Iron Age* of Oct. 25th, 1877.

Wanted—A Partner,

in a foundry and machine business, already well established. Locality splendid and healthy.
A practical man with means is wanted to join a practical man who is already well established.
Address ***CAR WHEEL FOUNDRY,***
P. O Box 134, Selma, Alabama.

WANTED,

Controlling Agencies for saleable articles of Hardware manufacture, suitable for home consumption or export. **BOYD & CHASE,**
Manufacturers of Oil Stones. ***107th St., N. Y.***

WANTED,—A first-class business man familiar with machinery and manufacturing, capable of handling large bodies of men, desires a responsible position. References satisfactory. Address,
IRON AND STEEL,
Care of ***P. O. Box 813, Bridgeport, Conn.***

NOW READY.

THE Metallurgical Review

For July.

PUBLISHED MONTHLY BY

DAVID WILLIAMS,

No. 83 READE ST., NEW YORK.

Branch Offices,
220 South Fourth St., Philadelphia.
77 Fourth Ave., Pittsburgh, Pa.

Subscription, including Postage to any address, domestic or foreign,
$5.00 - - - A YEAR.
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The above summary of the contents of the July number of *The Metallurgical Review* shows that its contributions are varied in character and of immediate practical importance.

Phosphorus determinations, the value of which is being daily more universally recognized, are by no means uniformly excellent or reliable, so that faith in their results becomes complete only when they are indorsed by the name of some prominent chemist. The reason for this uncertainty and lack of confidence is, to a certain extent, due to the circumstance that the methods employed are very numerous and demand high skill and conscientious work. The fact that these methods are by no means perfect has induced a large number of chemists to make individual researches, the fruits of a series of which are presented to the metallurgical professions by Messrs. Alfred E. Hunt, S. B., and Samuel Peters, whose work and the results to which it has led deserve careful investigation.

The third installment of Alex. L. Holley's valuable paper on the "Terrenoire Process of Making Steel" lucidly and simply states the chemical theory of the process, and gives some valuable practical data about molds, annealing and the uses of solid steel castings. The subject of the paper has attracted a large share of the attention of metallurgists recently, and it bids fair to be one of the revolutionary progressive movements marking the beginning of a new departure in the application of steel to many engineering purposes.

Professor T. Egleston, in the third and last installment of his paper on "Copper Dressing in Lake Superior," continues his accurate description of the construction, the work and the capacity of the dressing apparatus used in that region, which are in many respects unique.

Professor Anton Von Kerpely's description of the occurrence of liquid cyanides in a Hungarian blast furnace was translated for *The Metallurgical Review* from a manuscript copy of the proceedings of the Academy of Sciences, before which it was read. Although cyanides have been observed, even in large quantities, repeatedly, their nature has never been so carefully examined, nor were the conditions connected with their appearance so minutely noted as in this case. These are facts which give the paper great importance, as it is only by a thorough research of all phenomena connected with the blast furnace that its working can be clearly understood and corrective measures be taken accordingly

Cleaning and sorting machinery, drums, screens &c., form the topics of this month's installment of E. F. Althan's paper on coal and ore dressing—the most detailed and, theoretically as well as practically, exhaustive treatise on the subject as yet offered to English-speaking metallurgists.

The growing interest attached to lixiviation processes for the extraction of copper will render the second portion of the detailed chemical examination of the English chlorination process welcome to our readers.

Some novel principles are advanced by Mr. F. C. G. Mueller on the chemical reactions of the Bessemer process, which, together with a number of smaller notes, conclude July's issue of *The Metallurgical Review.*

Trade Report.

Office of THE IRON AGE,
TUESDAY EVENING, July 2, 1878.

The week in Wall street has been dull and uneventful, the financial markets reflecting to some extent the dullness in other departments of business. With July we enter upon the dullest month of the year. No activity is expected, and a large number of our business men have gone or are going abroad, while those who remain at home are more intent upon keeping cool than upon securing trade. It is to be hoped that this midsummer holiday will usher in a more general and profitable activity, and that with the return of cooler weather there will be an incentive to energy and enterprise now lacking.

The local money market is very easy. Borrowers on call are supplied at 1 @ 2½ %, according to collaterals. Mercantile paper is quoted at 3 @ 4 %. These low rates are causing the investment of large amounts of surplus capital in United States bonds, a movement in which the banks are leading.

The gold market is without feature, the premium averaging 100⅝.

The government bond market is strong, with an active demand, chiefly for 6s of 1881, 5-20s of 1867, 5s of 1881 and 4½ per cents.

The following is a recapitulation of the public debt statement issued July 1st :

DEBT BEARING INTEREST IN COIN.

Bonds at 6 per cent	$738,619,000.00
Bonds at 5 per cent	703,266,650.00
Bonds at 4½ per cent	240,000,000.00
Bonds at 4 per cent	98,850,000.00
Total principal	$1,780,735,650.00
Total interest	35,861,567.02

DEBT BEARING INTEREST IN LAWFUL MONEY.

Navy Pension Fund, at 3 per cent	$14,000,000.00
Interest	210,000.00

DEBT ON WHICH INTEREST HAS CEASED SINCE MATURITY.

Principal	$5,594,560,26
Interest	326,947.32

DEBT BEARING NO INTEREST.

Old demand and legal-tender notes	$346,743,313.50
Certificates of deposit	46,755,000.00
Fractional currency	16,347,768.77
Coin and silver certificates	45,829,600.00
Total principal	$455,875,682.27
Total unclaimed interest	6,037.03

TOTAL DEBT.

Principal	$2,256,205,892.53
Interest	36,404,551.37
Total	$2,292,610,443.90

CASH IN THE TREASURY.

	June 29.	May 31.
Coin	$197,415,132.99	$189,708,021.10
Currency	2,653,479.09	3,094,748.47
Currency held for redemption of fractional currency	10,000,000.00	10,000,000.00
Special deposit held for the redemption of certificates of deposit, as provided by law	46,755,000.00	35,705,000.00
Total	$256,823,612.08	$238,507,769.57

DEBT LESS CASH IN THE TREASURY.

June 1, 1878	$2,033,637,450.64
July 1, 1878	2,035,786,831.82
Increase of debt during the month	$2,149,381.18
Decrease of debt since June 30, 1877	24,371,391.44

BONDS ISSUED TO PACIFIC RAILROAD COMPANIES, INTEREST PAYABLE IN LAWFUL MONEY.

Principal outstanding	$64,623,512.00
Interest accrued and not yet paid	1,938,705.36
Interest paid by United States	37,896,334.50
Interest repaid by transportation of mails, &c	9,881,444.25
Balance of interest paid by United States	28,014,890.25

We give below the closing quotations of governments.

The stock market shows signs of increasing strength, with a slight advance in prices. The principal dealings have been in Lake Shore, D. L. & W., Northwestern, St. Paul, New Jersey Central, Western Union and Michigan. We give below the closing quotations of active shares.

The weekly statement of the New York banks was favorable for continued ease in the money market. The gain in surplus reserve was $2,626,225. With the July interest on the public debt coming out, the specie part of the reserve ought to be largely augmented within the next three weeks. Legal tender notes will not be wanted, and the amount in the banks ought not to be diminished until the movement of crops in the autumn. The following is a comparison of the bank figures for the last two weeks :

	June 22.	June 29.	Differences.
Loans	$234,713,700	$232,720,200	Dec. $1,993,500
Specie	15,069,700	16,311,900	Inc. 1,242,200
Legal t'nd'rs	52,466,900	53,996,300	Inc. 1,529,400
Deposits	205,384,100	205,965,600	Inc. 581,500
Circulation.	19,909,900	19,934,200	Inc. 24,300

As we go to press one day earlier than usual this week, owing to the occurrence of the 4th of July on our usual day of publication, we are unable to give all of our customary foreign trade tables. The following are those obtainable up to Tuesday night :

IMPORTS.

For week ended June 29 :

	1876.	1877.	1878.
Total for week	$3,486,548	$8,220,740	$3,977,512
Prev. reported	153,498,947	162,964,647	139,369,588
Since Jan. 1	$156,985,495	$171,185,387	$143,347,100

Included in the imports of general merchandise were articles valued as follows :

	Quantity.	Value.
Anvils	203	$1,965
Brass goods	6	696
Bronzes	1	405
Chains and anchors	4	136
Copper		2,989
Cutlery	56	15,345
Guns	15	4,071
Iron, other, tons	1,020	42,045
Metal goods	64	10,099
Needles	15	6,124
Nickel	1	151
Old Metal		274
Platina	1	2,692
Saddlery	10	771
Steel	631	17,382
Tin, bxs	25,067	108,845
Tin, bbls	10	322
Tin, 2,374 slabs	214,516	35,492
Wire	91	2,970
Zinc	5,512	287

EXPORTS OF SPECIE.

For week ended June 29 :

Total since Jan. 1, 1878	$8,579,482
Same time in 1877	19,561,172
Same time in 1876	30,117,152
Same time in 1875	53,944,686
Same time in 1874	28,210,599
Same time in 1873	27,372,729
Same time in 1872	36,037,644

Government bonds close as follows :

	Bid.	Asked.
U. S. Currency 6's	120¾	121
U. S. 6's 1881 registered	107⅝	107¾
U. S. 6's 1881 coupon	107⅞	107¾
U. S. 6's 1865 new reg	102⅝	102¾
U. S. 6's 1865 cou	102⅞	102¾
U. S. 6's 1867 reg	105⅞	106⅛
U. S. 6's 1867 cou	105⅞	106⅛
U. S. 6's 1868 reg	108	108½
U. S. 6's 1868 cou	108	108½
U. S. 10-40 reg	109	109¼
U. S. 10-40 coupon	109⅛	109¼
U. S. 5's 1881 registered	107⅛	107⅜
U. S. 5's 1881 coupon	107	107¼
U. S. 4½'s 1891 registered	104½	104⅝
U. S. 4½'s 1891 coupon	104½	104⅝
U. S. 4's 1907 registered	100⅛	100⅜
U. S. 4's 1907 coupon	100⅛	100⅜
Central Pacific Gold Bonds	105¼	105½

The following were the closing quotations of active shares :

Atlantic and Pacific Telegraph	25½	28
Chicago and Northwest	48⅞	49
" " Pref	75⅛	75⅝
Chicago, Rock Island and Pacific	117¼	117⅜
Chicago, Bur. and Quincy	106¾	107
Col., Chicago and Ind. Central	3¾	4
Clev., Col., Cin. and Ind	26	26½
Cleveland and Pittsburgh	79½	80
Chicago and Alton	77	77½
" Pref	103	...
Canton	16	16½
Delaware, Lack. and Western	59⅜	59⅝
Delaware and Hudson Canal	57	57⅛
Express—Adams	103¾	104
" American	47	47½
" United States	47	47½
" Wells, Fargo & Co	93¾	95
Erie	15¾	16
Harlem	139	140
Hannibal and St. Joseph	11¾	12
" " Pref	26½	28
Illinois Central	84⅞	85
Lake Shore	58⅛	58¼
Michigan Central	65⅜	65½
Morris and Essex	84	...
Milwaukee and St. Paul	52⅜	52½
" " " Pref	82⅜	82½
New York Central	108¼	108¼
New Jersey Central	38⅛	38⅜
New Jersey Southern	1	1⅛
Ohio and Mississippi	7¼	7½
" Pref	12	12⅜
Pacific Mail	17⅜	17½
Panama	125½	128½
Pittsburgh and Fort Wayne	94	95
Quicksilver	13	15
" " Pref	31	32
St. L. and Iron Mouutain	5	6⅛
St. Louis Kansas City Northern	4¼	4⅝
" " " Pref	20	21
Union Pacific	64½	65¼
Western Union Telegraph	87¾	87⅞

GENERAL HARDWARE.

There is little if any difference in the conditions of the trade since our last writing.

The many friends of Samuel Disston, of Henry Disston & Sons, will be pleased to hear of his safe arrival in Philadelphia from his European tour on Sunday last. A large company of friends, including Mr. Hamilton Disston and Sheriff Wright, proceeded down the river in a tug and met the Ohio, the vessel in which he returned. They were taken on board, and on the way into port were served with a banquet, at which several speeches were made, welcoming the voyager home and complimenting Capt. Morrison, the commander of the vessel, for his uniform courtesies.

The Gaylord Mfg. Co. have issued a supplement to their 1875 Illustrated Catalogue of Cabinet Locks, showing additions to their line of Secure Lever Chest Locks, in both iron and brass.

The Brass and Tubing manufacturers have issued, under date of 1st instant, a reduced price list for Sheet Brass, Tubing, &c., which we omit here, as the revised prices will be found in our price current, on page 35. They have also issued the following circulars, showing their terms and discounts :

Terms and Discounts for Brass Manufacturers' Price List, No. 19, Adopted July 1, 1878.

Discount 10 per cent. from list prices, Terms, cash within 30 days. If not paid within 30 days, interest to be added. The prices quoted for Brass and Gilding Scrap in list are net.

Terms and Discounts for Tubing Manufacturers' Price List. No. 4. Adopted July 1, 1878.

Tubing list No. 4, 10 per cent. discount. Terms, cash within 30 days. If not paid within 30 days, interest to be added.

The American Copper Rivet Association have issued a circular under date of 1st inst., in which they quote Rivets and Burs discount 25 per cent., instead of 10 per cent. as formerly. The list for Rivets and Burs is unchanged.

The manufacturers of Bright Wire goods held a meeting during the week, at which their prices for the coming season were fixed at discount 70 per cent., and an extra discount of 10 per cent. for cash in 30 days.

The demand for Nails is light and prices are unchanged. We quote 10d., $2.30, net, but for large orders a concession from this figure could be obtained.

H. Burden & Sons have issued a circular under date of 1st inst., in which they quote Horse Shoes, f. o. b. at Troy, N. Y., 3½ cents per pound, and Mule Shoes, 4½ cents per pound, cash. We quote these goods from store here, $3.62½ per keg for Horse Shoes and $4.62½ for Mule Shoes. The Rhode Island Horse Shoe Company have not changed their prices, and their agents here, Horace Durrie & Co., quote their goods from store at the following prices : Perkins Improved Horse Shoes, light, medium and heavy, $3.37½ per keg ; Mule Shoes, $4.37½ per keg ; Perkins' Snow Shoes, $4.87½ per keg. If ordered f. o. b. at works the price is 12½ cents less per keg.

Clark & Co., Buffalo, N. Y., have reduced the price of their Blind Hinges, as will be seen from the following circular :

BUFFALO, July 1, 1878.

From this date and until further notice the prices of our Blind Hinges will be as follows :

No.	Price list.	Per doz. sets.
1,	For wood, throws the Blind 1¼ in. from the casing	$3.50
3,	For brick, throws the Blind 3¼ in. from the casing	5.25
5,	For brick, throws the Blind 4½ in. from the casing	10.00
40,	For wood, throws the Blind 1¼ in. from the casing	3.50
50,	For brick, throws the Blind 3¼ in. from the casing	5.25

Discount, 70 and 10 per cent.
CLARK & Co.

In our issue of the 5th ult. we mentioned that Coulter, Flagler & Co. had made arrangements to deliver the Eagle Square Co.'s goods on factory account. We had no intention of conveying the idea that the goods were to be delivered free of freight charges, but from the following letter it seems that our phraseology was not sufficiently plain.

OFFICE OF THE HART, BLIVEN & MEAD M'F'G CO.,
107 Chambers and 91 Reade Streets.
NEW YORK, June 27, 1878.

To the Editor of the Iron Age—DEAR SIR : In a recent issue you called the attention of your subscribers to a change by which C. F. & Co. "have made arrangements to deliver the Eagle Square Co.'s goods on factory account."

It is claimed by Western jobbers that this means deliver free of freight, and although we think such construction is wrong, we are interested in having the doubt removed.

Truly yours,
THE HART, BLIVEN & MEAD MFG. CO.,
CHAS. BLIVEN, President.

We have received from the Nicholson File Company, Providence, R. I., a copy of a very elegant work published by them entitled, "A Treatise on Files and Rasps, descriptive and illustrated, for the use of Master Mechanics, Dealers, &c." This is one of the most elegant publications of the kind we have ever seen. Its mechanical execution is beautiful in every detail. The illustrations are in the highest style of their branches of art—steel plates, wood-cuts and lithographs ; the letter press is open and clean, the paper superior, and the printing all that could be desired. The book opens with a steel frontispiece, showing the works of the Nicholson File Co., which is a very excellent specimen of line engraving. The preface, by Mr. W. T. Nicholson, sets forth the object of the work. We quote as follows :

"For several years it has been in contemplation to publish a treatise upon the several points connected with Files and their uses, in which the principal, but nevertheless complex and confusing, names and terms embodied in what are known as the Sheffield, Lancashire and American File Lists, might be more clearly defined, and if possible made practically intelligible, not only to the educated dealer and mechanic, but to others having less knowledge of the subject, as apprentices in machine-shops and younger clerks employed by merchants dealing in Files and Rasps. After giving the subject careful consideration as to the most desirable form in which to embody this matter impartially, and at the same time be able to set forth the special points of merit claimed for the goods made by the Nicholson File Company, it was decided to devote so much of the work as seemed necessary to defining clearly and concisely the general features belonging to all Files, and to follow this with a detailed description of the distinguishing characteristics of the Files and Rasps commonly called for, giving some of the purposes for which the various kinds are used."

This purpose has been faithfully carried out. The information is certainly given impartially, and with no apparent desire to urge the claims of the company's own goods to an extent which would in the least detract from the value of the work as a treatise on Files and Rasps in general.

The contents are divided as follows : A general description of Files and Rasps containing much useful information ; a detailed description noting the peculiarities of each style and shape, illustrated with wood-cuts and plates, and constituting an encyclopedia of information concerning all shapes and sizes of Files known ; a brief account of the company's specialties fully illustrated and described ; a description of the processes employed in File manufacture, from the steel ingot to the finished article ; a chapter of much interest entitled "Hints on Filing," which is full of useful and practical suggestions about the use and care of Files and Rasps, and their special adaptation to special uses. There is also a complete and well-arranged index, a glossary of terms and definitions used in connection with Files and their manufacture, and list of Files seldom used, with descriptions of such as are likely to be unknown to the trade. The work contains about 86 quarto pages, and is neatly and substantially bound in cloth. It is a valuable and necessary addition to the limited literature of Hardware, and is a credit to the enterprise and taste of the Nicholson File Company.

The Nicholson File Company have also issued an illustrated catalogue and price list of the Files and Rasps in general use, besides a great many specialties of their manufacture. No change has been made in the discount, which is same as last season, viz., 35 per cent.

Bissell & Welles will sell at their new rooms, No. 83 Chambers st. (about July 24), a large line of table cutlery, some 5,000 to 6,000 gross in all. The sale will be without reserve, and is made by order of the Cutlery Association. The goods include the manufacture of the J. Russell Cutlery Company, Landers, Frary & Clark, Meriden Cutlery Co., Lamson & Goodnow Manufacturing Company, Beaver Falls Cutlery Company, and American Cutlery Company. All the goods offered have been manufactured since the last sale, and comprise only styles which have been standard during the year.

The following circular explains itself :

TO DEALERS IN SILVER-PLATED HOLLOWWARE.

GENTLEMEN : During the past five years of general business depression, a lessened demand and undiminished supply have produced a competition among the manufacturers of Silver-Plated Hollowware so excessive as to lead to a state of affairs which is alike disastrous to the manufacturers and demoralizing to the trade in these goods.

The undersigned manufacturers, therefore, feel that in order to receive a fair return for their capital, skill and labor, and eradicate many serious evils that have crept into the business, some sort of concerted action is imperatively necessary, and have agreed to the following terms of sale and discounts, which are to take effect from this date.

The discount on Silver-Plated Hollowware to be 40 per cent., four months' note, for approved credit, or a cash discount of 5 per cent. if the same is paid within 30 days from the average date of invoices. In all cases interest is to be charged after four months.

To purchasers of Hollowware to the amount of $500 net in a season, a rebate of 5 per cent. shall be allowed ; of $1000 net in a season, a rebate of 10 per cent. shall be allowed. The rebates are payable at the expiration of each season of six months, viz., January 1 and July 1.

The trade are also hereby notified that from and after this date goods will not be consigned or left on sale, and no goods will be exchanged or taken back.

We are confident that the evil of auction sales will be effectually remedied by this course, as the custom heretofore existing in these respects has forced the manufacturers to find an outlet through the auction room for returned goods, thus causing injury to the legitimate dealer, who in one sense justly complains of the same, while at the same time forgetting that the evil has been fostered by the pernicious custom of sending back shop-worn stock.

The above agreement will be strictly adhered to by all the manufacturers undersigned, who trust and expect that the same will prove to the mutual advantage of all who manufacture or deal in these goods.

Respectfully yours,

(Signed) MERIDEN BRITANNIA CO.; MIDDLETOWN PLATE CO.; SIMPSON, HALL, MILLER & CO.; ROGERS & BROTHER ; HALL, ELTON & CO.; REED & BARTON ; WILCOX SILVER PLATE CO.; ROGERS, SMITH & CO.; MERIDEN SILVER PLATE CO. ; DERBY SILVER CO.—Dated, June 26, 1878.

We have received the following letter on the subject of Screws at auction :

June 25, 1878.

To the Editor of The Iron Age : In your issue of the 20th inst. you quote the American Screw Company as assigning the reason why they have not already held a sale of Screws at auction was because they found "evidence of considerable stocks in dealers' hands." This, with an overstock in their own hands, means overproduction. Such being the fact, in my opinion a sale at auction would tend to aggravate and not to remedy the present dilemma. Let the Screw companies agree to cut down the products in exact proportion to their capacity to produce, and to an extent that the demand shall equal the supply ; this will at once restore confidence in the price and enable the manufacturer, the jobber and the retailer, to realize a fair profit.

The American Screw Company quote success in sales of coal at auction as an argument in favor of their proposition. The case is not parallel. Dealers in coal sell only coal, while Screws are but a moiety in a stock of Hardware. Any dealer in coal can afford to visit New York to attend a sale, while not over one per cent. of dealers in Hardware (outside of New York) would be present at a sale of Screws. Overproduction is the cause of the present trouble, for which there is one remedy only, and that is to make less Screws ; but if the manufacturers persist in making two gross where but one is consumed, the result will be the wreck of their capital and for the good of nobody. A CASH BUYER.

IRON.

There is little or nothing going on in the Iron market, and on every side complaints of dullness are heard. The only sale we hear of is 500 tons No. 1 of a Lehigh brand, at $16.50 delivered at Amboy. As we have previously mentioned, some of the Lehigh companies refuse flatly to meet the low figures at which Iron is being offered, and in consequence they are accumulating stock. We continue our former quotations, but in the present condition of the market they must be considered nominal. We quote Foundry No. 1, $16.50 @ $18 ; Foundry No. 2, $15.50 @ $17 ; Gray Forge, $14.50 @ $16.

Scotch Pig.—The only business we hear of is in small parcels at our quotations. We quote Glengarnock, $23.75 ; Coltness, $24, and Eglinton, $22.75.

Rails.—We hear of some inquiry for Steel Rails but no transactions are reported. In Iron nothing has transpired. We quote as before : Steel at mill, $43 @ $44, and Iron, according to quality, terms, &c., $32 @ $36.

Old Rails.—A sale of 300 tons Old Rails on private terms is reported. We quote $17 @ $18 nominally.

Scrap.—We quote No. 1 Wrought from yard, $20 @ $21.

METALS.

Copper.—Sales for the week sum up but about 10,000 pounds Lake Superior, mostly at 16¼¢, some small lots selling on the dock a trifle below without thereby establishing a quotation, the market closing steady at 16¼¢, while Baltimore may be quoted 16⅜¢ @ 16½¢, nominally. Nothing has transpired in futures. The interval of a receiving market in London has been but shortlived, the market being about £1 sterling higher according to the latest news. Best Selected now being quoted (as per cable) £70 @ £70. 10/, and Chili Bars, £64 @ £64. 10/. Our market here will in all likelihood remains uninfluenced by any London fluctuations for some three weeks to come, for our brass manufacturers will not be in the market for available Copper between about the 4th inst. and a week later, for they will attend to the usual semi-annual repairs. The tendency, we are inclined to believe, will then become a favorable one, there being a great many circumstances favorable to Copper, prominent among which are the low price and the more cheerful aspect in Europe. Although statistically Copper may not be deemed in a favorable position in Europe, there are powerful interests there, seemingly ready to give the metal a great lift, and the pacification of Europe lends strength to any such well concerted plan to bring Copper back to less ruinous figures. On the 20th ult., as per mail advices just to hand, Best Selected stood £70. The demand for Manufactured Copper continues moderate at the combination prices, which are unchanged. English Yellow Sheathing Metal is in only limited request, the nominal value being 13½¢, currency, in bond. There is some demand for American, but the price is irregular, on account of the competition with English. We quote : New Sheathing Copper, 26¢ ; Braziers', 28¢, and Bolts, 28¢. American Yellow Sheathing Metal, 14¢ @ 20¢ ; Yellow Metal Bolts, 25¢, and English Yellow Sheathing Metal, 13½¢, currency, in bond.

Tin.—The market here, partly on account of the heat and partly owing to the holiday week, has become very quiet. The dealings have been but trifling. We quote, at the close, Straits, in gold, large lines, 14¼¢ ; English Refined, 14 ¼¢ ; Common do., 14¢, and Banca, 17¼¢. London cables Straits, £62 ; Singapore cables $18.25 per picul, with an exchange of 3/11. The June deliveries in England and Holland have been 1,600 tons, and the stock in London on the 1st instant was 9,500 tons. As per mail accounts, dated June 20, Straits Tin then stood £61. 10/. *Tin Plates.*—Charcoal Plates are strong on both sides of the Atlantic, and Coke Plates are weak. The general situation is a quiet and expectant one here, and a firm one in England. We quote at the close, as follows : Charcoal Bright, $5.87½ @ $6 ; do., Ternes, $5.50 @ $5.62½ ; Coke Tin, $4.87½ @ $5, and ditto, Ternes, $4.75, all gold, per box, large lots, ordinary brands. By mail from Liverpool we are, under date 20th ult., furnished the following remarks : "Most of the cheap Charcoal Tin sellers are now booked up some way ahead, and fresh contracts could not be placed except at advances of from 6d. to 9d. per box. The same applies to favorite Ternes, both Coke and Charcoal, and the most notable weakness appears in Coke Tins, which are meeting few buyers at the lowest points yet touched."

Lead.—The market since our last report has been strengthening ; at all events, under 3⅝¢, currency no common Domestic Lead can be had. Consumers not being under an urgent necessity to buy, hold back, apparently determined not to re-enter the market until actual wants compel them, but they, in common with others in the metal trade, will not hesitate to confess, we believe, that Lead has reacted from extreme depression not so much by reason of speculation as in consequence of a healthy rebound. They do not, we believe, anticipate a return to the late low figures in any event, and would probably be glad to a man to secure as much of Lead as they could lay their hands on at 3⅜¢, currency, or below. If this be the general sentiment, and we have every reason to believe it is, the late upward turn was a truly legitimate one, and all the more so as it coincides with a similar movement in Europe, where it was rumored that Russia had secured 10,000 tons at late low prices. The fact is, so far as Europe is concerned, that the English mine owners in the Peninsula cannot go on producing at the ruinous figures that prevailed in June. If this be true, we shall have to be prepared for a lessened output in Spain, more important than the present German surplus. Should Europe under these circumstances continue to advance, a return to 3¢ @ 3⅛¢, currency, here, would be out of the question also from the export point of view, and Lead would seem safe enough. As per mail advices, Lead was steadier in England as early as June 20, when English Pig stood £16. 15/. There is no change to note in the prices of Manufactured, We quote : Bar, 4½¢ ; Pipe, 5¢ ; Sheet, 6¢ ; Tin-lined Pipe, 15¢ ; No. 1 Solder, 8½¢, all less 10 % to the trade.

Spelter and Zinc.—Some sales of Common Domestic have been effected at 4.55¢, currency, a slight advance in rates, the feeling being a decidedly better one since it is known that powerful speculators have taken the metal in hand in Europe in anticipation of a brisk summer demand. *Sheet Zinc.*—The market is quite dull, and prices are to a great extent nominal. We quote : Domestic, 6⅛¢ @ 6¼¢, currency ; and Mosselmann, 7⅜¢ @ 7⅝¢, gold.

Nickel—Remains steady at $1.20, currency.

Antimony.—A moderate trade is doing in the Cookson brand at 12¼¢, gold, while Hallet may be quoted 11⅞¢ @ 12¢, gold, nominally. London quotes £49 @ £51, according to brand.

COAL.

The market for the past week appears in a little better position for the dealers. Sales have been somewhat quicker, and there seems to be a better feeling. This does not, however, manifest itself in any serious advance in prices. Nominally there has been an advance in some of the sizes, and circulars have been sent out, but, unfortunately, dealers as yet have not heard from them. Some of the Lehigh people quote Lehigh Lump at $4.40, with Broken and Egg at $4.05. As the supply of this Coal is somewhat scanty, on account of the unusual distribution in the allotment for the month, it is not to be wondered at that they try to make the most of the situation. We do not hear of sales at the advanced figures. What little business there is comes mostly from manufacturers and others who must have it. They buy, it would seem, from hand to mouth.

In spite of the earnest protestations of the companies that peace and harmony mark every stage of the combination, there are signs that peace and harmony are not the only elements necessary to carry the companies through until the end of the year.

Production has been pretty well controlled, but prices have not advanced to an adequate figure to enable the companies to make up for their reduced outputs. Some of the companies seem to be in financial straits, for not long since one of them was obtaining advances from its customers in the shape of notes, but it would seem that its credit was not high, since these notes were not discounted upon the indorsement of the company, but were indorsed by individuals. Such things as these shake people's faith and make the hand-to-mouth policy prevail. The time for testing the strength of the combination will be when the need of money begins to be felt after making up the July returns. Buyers feel less anxiety about their winter supply of coal, because of late years the facilities for distribution during the winter months has so greatly increased, and delay does not entail such a very heavy difference in the cost of transportation. Under these circumstances it is a matter for little surprise that people wait to see how matters will turn out. This policy is just the one which will do the companies the most damage; their hope being that, as soon as they have established the strength of their combination in the minds of buyers, there will be a rush of business and prices can be put up to any extent.

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending July 2, 1878:

Hardware.

Boker Hermann & Co.
Cutlery, pkgs., 12
Charles R. P.
Millstones, 185
Gregg H. F. & Co.
Nails, bbls., 30
Guental G. & Sons
Ironware, cs., 4
Koster & Goodman,
Cases, 2
Lesher, Whitman & Co.
Cases, 1
Moore's J. P. Sons,
Guns, cs., 2
Patterson Bros.
Packages, 6
Schoverling & Daly,
Mdse., pkgs., 1
Spies, Kissam & Co.
Guns, cs., 2
Ward Asline.
Mdse., pkgs., 4
Wooley W. N.
Wire netting, rolls, 70
Wiebush & Hilger Hardware Co.
Hardware & cutlery, cks., 18
Order,
Wire, bdls., 32
Per. caps., cs., 5
Chains, cks., 23
Gun caps, cs., 6
Gun wads, cs., 4
Cases, 2
Casks, 1
Files, bxs., 1; cks. 42

Iron.

Lang W. Bailey & Co.
Bars, 119
Marvel W. D.
Ore, tons, 570
Milliken & Smith,
Rods, bdls., 377
Naylor & Co.
Pig, tons, 100
Bars, 4768
Coils, 269
Order,
Sheet, pkgs., 500
Bars, 1

Steel.

Dolge A.
Wire, cs., 5
Prosser Thos. & Son,
Tyre forgings, 4
Tyres, 6
Bars, 8
Rolls, bars, 2
Walscheid C. H.
Bundles, 120
Cases, 3
Woodford W. O.
Cases, 9
Bundles, 139
Tyres, 142
Order,
Packages, 9
Bundles, 137

Metals.

Agostini J.
Scrap copper, bxs., 1
Am. Meter Co.
Tinned sheets, cs., 50
Byrne Joseph & Co.
Tin plates, bxs., 360
Bruce & Cook,
Tin plates, bxs., 1384
Cort N. L. & Co.
Tin plates, bxs., 250
Drexel, Morgan & Co.
Tin and terne plates, bxs., 1969
Tin plates, bxs., 1935
Haxtun Benjamin,
Lead, bars, 2907
Meyer Moritz,
Lead, bars, 2498
Naylor & Co.
Tin plates bxs., 4189
Phelps, Dodge & Co.
Tin plates, bxs., 9108
black tag'rs, bxs., 99
Thompson D. & Co.
Tin plates, bxs., 2008
Order,
Spelter, plates, 1803
Tin plates, bxs. 12,175
Terne plates, bxs. 74

OLD METALS, PAPER STOCK, &c.

Nothing of importance has occurred in this market since last week. Business in all departments is very trivial. An occasional large sale is effected, but this is an exception and not the rule, as buyers are holding off and cannot be induced to purchase any considerable quantity.

The purchasing prices offered by dealers for Old Metals are as follows:

Copper, heavy	per lb.	$0.13	@ ....
Copper Bottoms	"	.10½	@ ....
Yellow Metal	"	.10	@ ....
Brass, heavy	"	.09	@ ....
Brass, light	"	.07	@ ....
Composition, heavy	"	.11½	@ ....
Lead, solid	"	.02½	@ ....
Tea Lead	"	.02	@ ....
Zinc	"	.02¾	@ ....
Pewter, No. 1	"	.09	@ ....
Pewter, No. 2	"	.07	@ ....
Wrought Iron	pr ton.	$16.00	@ ....
Light do	"	9.00	@ ....
Stove Plate	"	9.00	@ ....
Machinery do	"	10.00	@ ....
Grate Bars	"	3.50	@ ....

The prices current for Rags, &c., are as follows:

Canvas, Linen	per lb	3 c.	@ 3½c.
" Cotton, No. 1	"	3½c.	@ ....
" " No. 2	"	1½c.	@ ...
White, No. 1	"	3½c.	@ ....
" No. 2	"	2¼c.	@ ....
Seconds	"	1½c.	@ ....
Mixed, Woolen	"	2 c.	@ 3 c.
Soft, do	"	6½c.	@ 7 c.
Gunny bagging	"	3 c.	@ ....
Jute butts	"	2¼c	@ ...
Kentucky bagging	"	3 c.	@ ....
Book Stock	"	2¼c.	@ ....
Newspaper Stock	"	1¼c.	@ 1½c.
Waste Paper and Scraps	"	½c.	@ ...
Kentucky Bale Rope	"	4 c.	@ ....
Oakum Junk, No. 1	"	4½c.	@ 5 c.
" No. 2	"	3 c.	@ ...
Tarred Shaking	"	1 c.	@ 1¼c.
Grass Rope	"	....	@ 2¼c.

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St.
PHILADELPHIA, July 1, 1878.

Pig Iron.—The close of the first half of the year finds the Iron trade suffering from a depression greater than at any time since the panic. Prices are also at a lower point than before, and so far as can be seen the trade is as far from improvement as ever. Comparing the prices of Iron with quotations of equal date in 1877, we find a decline of about $1 per ton or 5½ %. The decline in gold in the same time being 5 %, leaves the price of Iron, specie value, practically about same as it was in July, 1877. It is difficult to arrive at the exact figures, but it is generally conceded that the cost of production has been decreased nearly, if not quite, in proportion to the decrease in price of Iron, so that the furnaces are relatively in much the same condition as a year ago. It must not be forgotten, however, that during the past six months the shrinkage has been most serious. Prices improved during September and October until a full dollar per ton advance could be noted. During December the market began to show signs of weakness, which has since steadily increased until prices have been marked down from $1 to $1.50 and in some cases $2 ₱ ton below the figures ruling during the latter months of 1877. The advance of last fall appeared to strengthen the idea that the lowest point of depression had been passed, but events have proved otherwise. To the agitation on the silver bill and the tariff question and other matters of similar character by many is attributed the dullness of the spring trade. Uncertainty and distrust seemed to hang over the trade in every direction, and in view of all the circumstances it is not surprising that business the past six months has been a disappointment. The immediate outlook does not present any very encouraging features, and the next two months will no doubt be marked by continued dullness and depression. The recent failures and suspensions in the trade are indications of the heavy strain before which even firms of large wealth have been compelled to succumb, and the present condition of affairs leaves too much room for fears that the worst is not yet past. The market is so crowded with needy sellers, and there is so little disposition to buy beyond supplying the moderate requirements of the immediate present, that it is impossible to hope for a change until the demand largely increases, and of that there is no present indication. The longest period of depression, however, must have an end, and although apparently as distant as ever, there can be no doubt each succeeding year brings the end so much nearer. There are many grounds upon which predictions of improvement might be based, but as some of these existed a year ago, and no improvement has yet been realized, the trade is becoming skeptical in regard to prophecies on such matters. The magnificent crops of last year, the increasing value of our exports, the settlement of the tariff question, the silver question, the increased earnings of the leading transportation companies, the gradual revival of railway building and kindred matters ought, and no doubt will, eventually exercise an important influence, and tend to restore our manufacturing interests to something of their former prosperity. It is believed that prices have at last reached their lowest point, and although no advance is expected during the summer months, it is not unlikely that best brands will be held at about present quotations. Cost of production has been reduced to its utmost limit, but prices have been cut below that point, and it is the opinion of the trade that not a single furnace in Eastern Pennsylvania is realizing first cost for their products. From this point of view it will seem that a change is inevitable, but, as we said before, it is apparently as far distant as ever. One immediate cause of the depression and weakness may be found in the fact that several old lots of Iron are being placed on the market, some connected with the failures of 1873 having been offered here last week. There is in fact a general disposition to unload, and as buyers are unwilling to take hold, the feeling is one of weakness and distrust. Standard brands are held with a fair degree of steadiness, but outside lots seem to have no definite value; hence the unsettled condition of the market. In ordinary transactions No. 1 Foundry may be quoted $17 @ $19; No. 2, $16 @ $16.50; Gray Forge, $15 @ $16; White and Mottled, $13 @ $14, average of sales being at medium figures. Outside lots are said to be offered at considerably lower prices for prompt cash.

Manufactured Iron.—The demand during the past six months has been somewhat spasmodic, and, with the exception of special shapes, there has been no permanent activity. Contracts for bridge work have been so extensive that most of the mills making this class of Iron have been kept fully employed, and still have large orders to complete. The building of the elevated railways in New York has also had an important influence in keeping mills busy and prices steady. During the past two months there has also been a little spurt in shipbuilding, which has kept the Plate mills from falling into entire inactivity, as seemed likely at one time. Prices of Plates have been cut down very seriously, and if first cost has been realized on a large portion of the business that has been taken, that is about all that can be said. At the moment there is a fair amount of work on hand, but there are no inquiries of importance, and from present indications it seems likely that the next two months will not furnish much new business. The decline in prices during the year has been from 7 to 10 %, but during the past few days there has been a growing disinclination to enter orders at the low rates taken a short time ago, and it is hoped better prices will henceforth be obtained.

Sheet Iron.—This branch of the Iron trade has suffered severely, the amount of business being light and unsatisfactory, while prices have steadily declined without any indication that bottom has been reached or that low prices will cause a demand. The decline from prices current a year ago may be estimated at from 7 to 15 %, but the demand is no greater than before The mills in this vicinity will be closed for the present, and unless there is some improvement in the outlook, the suspension of work may be quite extended, as some of the leading firms are carrying large stocks and feel indisposed to add to them indefinitely. It is said that the business done has been nearly an average, but at figures which left nothing for manufacturers. Manufacturers now appear determined to get living prices or cease business entirely. Cost of production cannot be reduced, so that it is likely that prices are now at the lowest.

Merchant Bar—Has been probably the dullest branch of the whole trade, and although prices for a while were pretty well maintained, the market has gradually broken down, and at this writing the feeling is one of complete demoralization. It is difficult to say what prices actually are, as each mill seems to have its own classification of extras and makes prices to suit the exigencies of the moment. The cutting in extras seems to be the chief cause of complaint, and from present appearances there is not much prospect of early improvement in this department of the Iron trade. Consumption during the past six months has been very light, showing clearly the great depression which exists in manufacturing interests generally.

Steel Rails.—This branch of trade presents more encouraging features at the moment than any other connected with Iron interests. The mills have been kept steadily at work, and during the past six months an advance in price of from 7 to 10 % has been firmly established. Sales during the early part of January were made at $40, while $43 is now refused, and $44 @ $45 may be considered an average price. There are numerous orders on the market for small lots, while several leading roads are endeavoring to place their orders for quantities ranging from 5000 up to 25,000 tons each. There can be no question that the railways are doing an enormous business, and will be compelled to purchase Rails largely as well as other equipments. In this connection we make the following abstract of the report of the Bethlehem Iron Company, presented to the Board of Directors a few days ago. The net earnings were shown at $318,060.91. Against this was charged taxes, commissions, interest, furnace repairs, stock house, &c., a total of $157,536.63, leaving a balance of $160,524.28. Adding to this the net balance of June 1st, 1877, gave a total of $205,798.41. Last year the company charged off some $200,000 in shrinkage. Following in this general policy of getting rid of "dead items," the value of abandoned mines, shrinkage in properties, discounts, &c. were charged up against the balance given to the amount of $169,385.91, leaving a net balance to profit and loss of $36,412.50. During the year 37,793 tons of steel rails, 15,165 tons of steel billets, and 52,958 tons of spiegel and pig iron were made. In steel billets there is a very active demand. During the year only 4,784 tons of iron rails were made. It is expected that the prices now ruling will enable the Bessemer companies to earn a fair interest on their capital, and with prospects of a demand nearly equal to the full capacity of the mills. The outlook is decidedly encouraging, and it is hoped may favorably influence other branches of the iron trade.

Iron Rails.—While there is some little improvement to be noted, as compared with the condition of the trade six months ago, and prospects are fairly encouraging, the change is not so marked as in the Steel Rail trade. Some large orders for Iron Rails have been placed during the past month, and there are buyers in the markets for additional lots to a very important extent, but the prices offered and the terms of payment, are serious obstacles to the acceptance of a large proportion of the business. Still, there is a fair prospect that the mills will get enough business to keep them well employed, although prices may not leave much margin for profit.

Old Rails.—The market during the past six months has been weak, and prices have steadily declined until a reduction of about $1.50 per ton was established, as compared with the price at the commencement of the year. Sales have recently been made at $18 @ $18.50, but at the present time it would be difficult to secure lots of good quality at less than $19 or $19.50. The future is a little uncertain, however, and as large quantities will have to come on the market soon, it is not unlikely that prices may yield a little. The Southern roads especially, are said to have an enormous quantity of Rails which must be renewed at an early date, so that the supply of Old Rails is likely to be large, and unless the demand becomes more active than at present prices will have to recede.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue,
PITTSBURGH, July 1, 1878.

General business has been very dull during the past week, and no change for the better is anticipated until the latter part of the month. It is customary with many of our manufacturers to stop during July to take stock and make repairs, and as business is very unsatisfactory, it is not likely that they will be in any hurry about starting up again. However, some of our manufacturers are hopeful in regard to the immediate future; stocks of all kinds of manufactured goods are comparatively light, both in first and second hands, and with big crops and in view of the heavy emigration Westward an increased consumption is confidently expected this fall.

The statement submitted by Rees, Graff & Woods to their creditors is not very encouraging, as the liabilities are heavy, while the assets are not all that could be desired by any means. The firm have made a proposition to pay 25 % of all unsecured liabilities, 5 % in one year, 10 % in two years and the remaining 10 % in three years, without interest. What action the creditors will take has not yet been developed. The feeling is increasing among the trade that it is not politic nor just to grant these suspended firms an extension without an understanding that they are not to sell their product below cost of production, and a guarantee that it be adhered to in good faith. It is very evident that those firms asking their creditors for a compromise and extension have been losing money, and it is fair to infer that they have been selling their goods below cost of manufacture. The question is just this: Is it just or politic to compromise with these suspended firms at 10¢ to 50¢ on the dollar, as the case may be, give several years without security to pay the same, and allow them to start up again and go into competition with other firms who propose to pay dollar for dollar? Would it not be better for the trade and the creditors as well, in many instances, to refuse extensions and let the individual or firm asking for the same be wound up? and would it not in the long run be better for the latter as well as the former? Experience of the past few years has developed that but very few of those obtaining extensions have been able to meet their payments; hence, as a rule, we are of the opinion that extensions of late years have done a good deal more harm than good.

Pig Iron.—There has been very little inquiry during the past week, and the probability is that the demand will continue light until the latter end of the month, as most of the mills and foundries will be stopped during the time in question, taking stock and making repairs. So far as regards prices, however, there has been no quotable change since the date of our last report, and stocks are very much reduced, particularly in the hands of consumers; hopes of an increased demand within the next few weeks are entertained. Not only are stocks light, but the production, not only here but at those points tributary to this market, is down lower now than it has been at any time since the panic; and, moreover, it is believed that the cost of production, with the exception of ores, has been reduced to the very lowest limit. Bituminous Coal Smelted Irons are still quoted at $18 @ $20, 4 mos., for Foundry, and $17 @ $18.50 for Forge, the latter figure for standard brands of Red Short. Coke Irons, $16 @ $17.50, 4 mos., for Forge, according to quality. In Hanging Rock Charcoal the only reported sale was 70 tons of Cold Blast at $31, cash. Bessemer Pig very dull; rail mills are well supplied and are not disposed to make any addition to their present stocks. Quoted nominally at $19 @ $19.50, 4 mos.

Manufactured Iron.—The volume of business continues to grow less every week, and there is not likely to be any improvement in the demand until next month, or after harvest. In regard to the future there is a diversity of feeling. Some of the trade, in view of light stocks, look for an increased demand as soon as the fall trade opens up, predicting, in view of the abundant crops and heavy emigration to the West and South, an increased consumption this fall and winter in those great consuming sections of the country. Another favorable feature lies in the fact that the production is not likely to be so large during the last half of the year, as a number of mills, being financially embarrassed, are not likely to be started up again for some time; and as it has been fully demonstrated that selling below actual cost of production can have but one end, there is nothing like the disposition manifested to cut prices that there has been. We continue to quote Refined Bars at 1.70¢ @ 1.80¢, 60 days, and poor stock at from one to two-tenths less.

Nails.—The market continues in a very unsatisfactory and demoralized condition, as, in addition to a limited demand, there is no uniformity in regard to price. Jobbers here are still sending out $2.05 lists, and this being the case it is evident that they are paying below their selling price, but some of our manufacturers say that $2.15, cash, is the lowest price they will accept, although it is hardly necessary to state they are not selling. The production is light, both here and at Wheeling, and it is not likely that it will be increased until the market improves, of which the prospect is not very encouraging at the present writing.

Horse and Mule Shoes.—The movement continues light, as it always is at this particular time, and it is not likely that there will be any decided improvement for some weeks to come. Shoenberger & Co. continue to quote their Juniata brand in 100-keg lots at $3.37½ and 4.37½, cash. Special rates for large lots.

Wrought Iron Pipe.—Business is generally reported dull for the season, and prices to manufacturers unsatisfactory. We continue to quote discount on Gas and Steam Pipe at 60 to 65 %; Boiler Tubes 40 % off.

Steel.—There is a fair business for the season, although but few of the mills are working up to anything like their full capacity. No change in prices, which continue to rule in buyers' favor.

Rails.—Steel Rails are still quoted steady at $44 @ $45, cash, at mill. Sales of 1000 tons at $44. Old Iron Rails in light supply here, but the inquiry is only fair. No change in prices, $19.50 @ $20, cash, for ordinary and $20.50 @ $21, cash, for special lots.

Scrap.—The market for all kinds of Scrap continues very quiet, and while the tendency is in buyers' favor there has been no quotable change during the past week.

CHATTANOOGA.

Office of *The Iron Age*, Market and 8th Sts.,
CHATTANOOGA, July 2, 1878.

The Iron business in all its departments is steady and uninteresting. Crude metal is only in fair supply, and prices remain steady. Neither consumers nor producers look for any early marked improvement; hence the former buy only what thay must have, and of the latter are shortening slightly the balance production. The prospect is that we shall get through the dull season experiencing no special embarrassment. All parties have very thoroughly learned the lesson of economy, as is well illustrated by the fact that a furnace which turns out an average of more than 25 tons of Foundry Iron daily, is operated by a labor force of 22 men, and one man does the combined duties of superintendent, secretary and treasurer. A considerable order for Water Pipe for California has been secured by a foundry here, our makers being able to compete with Philadelphia for the two reasons that raw material here is much cheaper and favorable freight rates will place Chattanooga products at the seaboard at less cost than the cost of manufacturing in Eastern cities. The weather was cool and dry the first days of the week, and ended warm and showery.

Pig Iron.—There is no change in the Pig Iron market worth noting. We make no change in figures, though probably slight concessions would be granted on large lots for cash. We quote: Coke Irons, No. 1 Foundry, $17 @ $18; No. 2, $15 @ $16; Gray Forge, $13 @ $14; White and Mottled, $11 @ $12. Hot Blast Charcoal—No. 1 Foundry, extra, $20 @ $21; do., $18 @ $20; No. 2 Foundry, $16 @ $18; Gray Forge, $15 @ $17; White and Mottled, $15. Cold Blast Charcoal—Car Wheel Metal, $22.50 @ $27.50; do., Extra Standard, $24.60 @ $29.50; Forge, $17.60 @ $22.

Muck Bar.—$27 @ $34: Old Rails, $16.50 @ $17.50. Old Car Wheels, $18.

Ores.—Brown Hematite, 50 to 56 %, ; ₱ ton, $1.75 @ $2.25. Red Fossiliferous, 50 to 56 %; ₱ ton, $1.70 @ $1.90. The above prices for Ores delivered in Chattanooga on cars or on the wharf from flat-boats.

Nails—Show some more life than last week. The raid of the Upper Ohio factories seems to be weakening. The market, at best, no matter how ruinous the price might be to the manufacturer, will absorb but limited amounts. Builders would not generally lay in supplies for use in the Fall if they could get them for even less than the lowest rates offered by the raiders in Memphis; and the latter have learned, if they did not know it before, that the building season in Southern cities is rather in Winter than in Summer. We quote at $2.25, with usual discounts on large lots.

Manufactured Iron.—The market is fair. Bars are in good demand. The mills are all fully employed. Railroad supplies are fairly brisk. Bar we quote at $2; Railroad Spikes, $2.50; Light Rail, $2.25; Track Bolts, $3; Trestle Bolts, $4.

Coke.—The furnaces in Central Alabama which began using coke from this district are doing well with it and the management report favorably. The probability is that the Chattanooga district will secure a monopoly of the coke supply for iron-making purposes, and if such shall be the case, both mining and coke making will grow rapidly in importance. We quote at $2.50 per ton, on cars, in Chattanooga.

Coal.—We quote run of mine to manufacturers at $1.50 @ $2 per ton, on cars, at Chattanooga.

CLEVELAND.

CLEVELAND, July 1, 1878.

Iron Ore.—The business in Lake Superior ore has almost entirely suspended. Furnaces cannot afford to buy ore at present prices and sell Pig Metal in the present market. Nor is there any inclination to make Pig Metal for the future. Many of the ore companies of Lake Superior are expecting to stop production entirely, and all are curtailing it. There is no disposition to make lower prices on ores of standard quality. If the policy of cutting down is followed up, as is now under advisement, there will be little ore on this side of the lake unsold this fall. Standard specular ores may be quoted firm at $6, with nothing doing, however.

Pig Iron.—There is very little business doing in Pig Metal. The price of Bessemer Iron, which has been the only saleable grade since last fall, has fallen so low that furnaces are unwilling to take contracts at a price even with the last sales, and several companies lately working on Bessemer Metal are about to go out of blast. There is no call for Mill Iron, and the foundries are buying only from day to day, to cover their contracts. There is a fair demand for Foundry Pig Iron of extra properties for strength and cleanness, but it is only in a small way.

Bar Iron and Nails.—The trade in Manufactured Iron is not active, and sales are made only in small lots. The present is not the usual season for large contracts. Since the stoppage of several mills in the Western district, and the consequent curtailment of production, a feeling prevails that the early fall trade will be accompanied by a stiffening in price. The summer trade will probably absorb the stocks now in excess of the wants of trade, and the mills and merchants expect a more healthy condition and a more perfect equalization of supply and demand this fall.

Scrap Iron.—All kinds of Scrap material are dull. The largest consumers of Old Rails in this vicinity are obliged to stop their mills, and this market ceases to offer the inducements it did lately.

BOSTON.

JUNE 29.—*Pig.*—It seems impossible to work up prices, even since the advance in freights. We quote: $19 for No 1, $18 for No. 2, and $17 for Gray Forge. *Bar* continues quiet and easy, quoting $39.50 for Refined and $34 @ $35 for Bolt; American Rails, $32 @ $37; Steel Rails, $42 @ $43, from mill. Nails are in light demand at unchanged prices. Sheet is selling at 3¢ @ 3¼¢ ₱ lb. Russia is quiet at 10¾¢ @ 11¢. We quote English Spring Steel at 7¢ @ 8¢, gold; 9¢ @ 11¢ for German; 9¢ @ 11¢ for Machinery; 14¢ @ 15¢ for Cast; 10¢ @ 12¢ for Blister; 8¢ for American Spring; 13¼¢ @ 14¢ for Cast; 9¢ for Blister; and 8¢ for Machinery. All kinds of Manufactured Iron have had a very dull week. Imports have been quite liberal. The Massachusetts, from Liverpool, brought 37 cs. Steel, order. The Bulgarian, from Liverpool, brought 1693 bars Iron, Thayer & Lincoln; 45 bdls. and 1214 bars Iron, Nightingale & Kilton; 5012 bars do., Fuller, Dana & Fitz: 2773 bars Iron, 84 bdls. Nail Rods, Blake Bros.; 2219 bars Iron, Brown Bros.; 7362 bars Iron, Nailor & Co. The Iberian, from Liverpool, brought 970 bars Iron, 22 bdls. Bar Iron, 30 do. Hoop do., 24 do. Galvanized do., Thayer & Lincoln. The Atlas, from Liverpool, brought 100 bxs. Iron, Williston, Knight & Co.; 146 bdls. iron, Naylor & Co.; 56 bdls. Steel Bars, Merchants' Dispatch Transportation Company. The steamer Otranto, from Hull, brought 2751 bars Iron, Nils Mitander; 15,170 bars and 559 bdls. Iron, 447 coils Wire Rods, order. *Copper.*—The market is dull and easy. The Iberian, from Liverpool, brought 211 Yellow Metal Bolts, Thayer & Lincoln. The Massachusetts, from Liverpool, brought 112 bars Yellow Metal, Spinney, Eaking & Co. For Manufactures we quote: New Sheathing, 26¢; Bolts and Braziers, 28¢; Yellow Metal Bolts, 20¢; do. Sheathing, 18¢. *Lead* has advanced sharply, consumers as well as speculators purchasing liberally at the low prices current early in the week, and holders refusing to sell except on steadily advancing limits. We quote: Pig, 3½¢ @ 3¾¢, currency; Sheet, 6¢; Pipe, 6¢; Tin-Lined Pipe, 15¢; Bar Lead, 5½¢; all of these, excepting Pig, are subject to the usual trade or 10 % discount. *Antimony* is quiet at 12¢ @ 13½¢, gold, for Boston spot lots. *Spelter* is easy, closing at 4½¢ @ 5¢ on the spot for 10-ton lots. *Tin* is quiet, without important sales. Singapore is cabled lower. The Massachusetts, from Liverpool, brought 100 bxs. Tin Plates, Fuller, Dana & Fitz; 50 do. do. do., Farrar, Follet & Co.; 261 do. do. do., order. The Bulgarian, from Liverpool, brought 361 bxs. Tin Plates, Thayer & Lincoln; 223 do. do. do., order. The Pembroke, from Liverpool, brought 1152 bxs. Tin Plates, S. May & Co. The Iberian, from Liverpool, brought 400 bxs. Tin Plates, order. The Atlas, from Liverpool, brought 450 bxs. Tin Plates, order. We quote: Straits, 14¼¢ @ 14⅜¢; Banca, 17¼¢ @ 17⅜¢; Refined English, 14½¢ @ 14¾¢, gold. We quote Plate: Charcoal, I.

C., $6 @ $6.25; Coke, $5.25 @ $5.50; and Terne, $5.50 @ $6, gold.—*Commercial Bulletin.*

ST. LOUIS.

Specially reported by Messrs. SPOONER & COLLINS, Iron Commission Merchants, 217 North Third street, St. Louis, under date of June 27: Pig Iron business for the past week has been very quiet, this being the dull season. We anticipate no changes until after July. Old Rails are in fair demand and prices low.

	No. 1.	No. 2.	Mill.	White and M't'l'd	
M'souri Stone Coal	$22.00	$20.00	$19.00	$17.00	
Missouri Charcoal	20.00	19.00	18.00	16.00	
Tenn. Charcoal...	20.50	19.00	17.50	16.00	
				Mottled.	White
Tenn. Coke, very soft and strong.	20.00	19.00	17.00	15.00	.....
Hang. Rock Charcoal	24.00	23.00	21.00	20.00	
Hang. Rock Charcoal, Cold-short.	23.00	21.00	20.00	.....	
	Extra No. 1 I. M. Ore.	No. 1 I. M. Ore.	Extra A No. 1 Native.	No. 1. Native.	Abice, Am. Scotch
	Extra No. 1.	No. 1.	B No. 1.	No. 2.	.....
Hang. Rock Coke.	23.00	22.00	21.00	19.00	
Moxahala Blackband Ores.....	23.00	22.00	21.00	19.00	

COLD-BLAST CHARCOAL—All Numbers.

Hanging Rock.....	4 mos.	$28.00 @ 33.00
Tennessee	4 mos.	25.00 @ 30.00
Kentucky.....	4 mos.	25.00 @ 30.00
Missouri	4 mos.	25.00 @ 30.00
Georgia	4 mos.	25.00 @ 30.00
Alabama	4 mos.	25.00 @ 30.00
Assorted Bar Iron		1.75 @ ....
No. 1 Railroad.	₩ 100	.70 @ ....
Heavy Cast Scrap.....	"	.60 @ ....
Light " "	"	.40 @ ....
Old Rails.....	4 mos.	19.00 @ 20.00
Old Car Wheels.....	4 mos.	17.00 @ 18.00

CINCINNATI.

Messrs. E. L. HARPER & Co. (successors to Messrs. L. R. HULL & Co.), under date of June 29, write us as follows: Notwithstanding that this time is generally considered the dullest part of one of the dullest months of the year, the volume of business has been unexpectedly very fair during the past week. The indications are favorable for a good business soon after July 1st, and with the very favorable condition of the crops in all parts of the country it may reasonably be hoped that the expected improvement may be well sustained.

HOT-BLAST FOUNDRY.

Hanging Rock C. C., No 1.....	$21.50 @ 22.00
" C. C., No. 2	19.00 @ 20.00
Alice, No. 1 Extra, L. M.....	20.00 @ ....
" No. 1 " N. O.....	19.00 @ ....
" No. 1, N. O.....	18.50 @ ....
Hanging Rock Coke and S. C., No. 1..	18.00 @ 20.00
" " S. C., No. 2..	15.00 @ 17.00
Virginia Coke, No. 1.....	19.00 @ 20.00
" No. 2.....	17.00 @ 17.50
Shawnee S. C., No. 1...	18.50 @ 19.00
" S. C., No. 2.....	16.00 @ 17.00
Hocking Valley S. C., No. 1.....	18.50 @ 19.00
" S. C., No. 2.....	16.00 @ 17.00

FORGE IRONS.

Hanging Rock, No. 1 C. C.....	18.00 @ 19.00
Hanging Rock, No 1 Coke.....	16.50 @ 17.00
Longdale, No. 1 Coke.....	16.50 @ 17.00
Ala. and Tenn. No. 1 C. C.....	16.50 @ 17.00
Red-short, No. 1 Coke.....	18.50 @ 19.50
Cold-short, No. 1.....	15.50 @ 16.00
Old Rails, prime.....cash,	19.00 @ 20.00

CAR WHEEL AND MALLEABLE.

Hanging Rock C. B.....	31.00 @ 33.00
Cherokee C. B.....	30.00 @ ....
Southern and Western Brands.....	28.00 @ 30.00

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of July 1, write us as follows: No change of moment to report. Business quiet, but this is its normal condition here at this season. Strong hopes are entertained of a more favorable condition of things within the next 60 days. The usual time, 4 mos., is allowed on the quotations below:

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal.....$21.00 @ 22.00	
No. 2 " "	18.00 @ 20.00
No. 1 Southern, Charcoal.....	19.00 @ ....
No. 2 " "	16.00 @ 17.00
No. 1 Hanging Rock, Stonecoal and Coke	19.00 @ 20.00
No. 2 Hanging Rock, Stonecoal and Coke	17.00 @ 18.00
No. 1 Southern, Stonecoal and Coke..	17.00 @ 19.00
No. 2 " "	16.00 @ 17.00
"American Scotch".....	18.00 @ 20.00
Silver Gray.....	15.00 @ 17.00

MILL IRONS.

No. 1 Charcoal, Cold-short and Neut'l.	16.00 @ 17.00
No. 1 Stonecoal and Coke, Cold-short and Neutral	16.00 @ 16.50
No. 2 Stonecoal and Coke, Cold-short and Neutral.....	15.50 @ 16.00
No. 1 Missouri and Indiana Red-short.	20.00 @ 21.00
White and Mottled, Cold-short and Neutral	13.00 @ 15.00

CAR WHEEL AND MALLEABLE IRONS.

Hanging Rock, Cold-blast	30.00 @ 32.00
Alabama and Georgia, Cold-blast.....	25.00 @ 30.00
Kentucky, Cold-blast.....	23.00 @ 26.00

BALTIMORE.

Mr. W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following prices, under date of July 1: Trade has ruled extremely quiet the past week, with little or no inquiry, but values remain firm and unchanged at annexed figures.

Refined Bar Iron, 1 to 6 wide by ⅜ to 1 thick.....₩ lb	1.85 @ 2	¢
Refined Bar Iron, 1 to 4½ wide by 1⅛ to 2 thick..... "	1.85 @ 2	¢
Refined Bar Iron, ¼ to 2. Round and Square..... "	1.85 @ 2	¢
Hoop iron, 1⅛ wide and upward.. "	2⅛ @ 2¾	¢
Band Iron, from 1¼ to 4 in. wide.. "	2¼ @ 2½	¢
Horse-shoe Iron..... "	3 @ 3½	¢
Norway Nail Rods..... "	4¼ @ 5¼	¢
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes..... "	13 @ 14	¢
Machinery Steel..... "	8 @ 10	¢
Cast Spring Steel..... "	6 @ 6½	¢
Homogeneous Steel Plate..... "	7 @ 7½	¢
Common Horse Nails ..... "	13 @ 16	¢
R. R. Spikes, 5½x9-16.....	2½	¢ @ 2¾ ¢
Perkins' Horse shoes, ₩ keg of 100 lbs.....	$3.37½	
" Mule shoes.....	4.37½	

	20	9	8	7	6	
Putnam Horse Nails.....₩ lb	18	19	20	21	23	¢
Globe Horse Nails.....₩ lb	18	19	20	21	23	¢

Less list discount to the trade.

Messrs. R. C. HOFFMAN & Co., Iron and Commission Merchants, No. 23 South Frederick street, report the Pig Iron market as follows, under date of July 1: We continue last quotations for Pig Iron and Blooms. Market dull and sales light.

Baltimore Charcoal Pig.....$26.00 @ 28.00	
Virginia " "	26.00 @ 28.00
Anthracite No. 1.....	19.00 @ 20.00
" No. 2.....	18.00 @ 19.00
" No. 3.....	16.00 @ 17.00
" Mottled and White.....	13.00 @ 14.00
Charcoal, C. B. Blooms.....	50.00 @ 52.00
" " Billets.....	52.00 @ 55.00
Refined Blooms..	43.00 @ 45.00

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, Richmond, Va., writes as follows under date of July 1: This market very quiet and without change of quotations.

American Scotch Pig Iron.....$22.00 @ 23.00	
Anthracite, No. 1.....	19.00 @ 20.00
" No. 2.....	18.00 @ 19.00
" No. 3.....	17.00 @ 18.00
" Mottled.....	14.50 @ 15.50
Coke, No. 1	19.00 @ 20.00
" No. 2.....	18.00 @ 19.00
" No. 3.....	16.50 @ 17.50
Va. Cold-blast Charcoal, Cold-short...	20.00 @ 23.00
Va. " " Neutral.....	27.00 @ 28.00
Va. Warm-blast " Cold-short...	18.00 @ 21.00
Va. " " Red-short..	17.00 @ 18.00
Old Rails.....	16.00 @ 17.00
Wrought Scrap No. 1.....	17.00 @ 18.00
Cast " (machinery).....	17.00 @ ....
Richmond Refined Bar Iron.....	2c. @ ....
Horse Shoes per keg.....	4.25 @ 4.50
Mule " "	5.50 @ ....
Old Dominion Nails, Standard Size, ₩ keg.....	2.40 @ ....

Freights to Philadelphia, $1.40 per ton of 2240 lb., by sail.

Freights to New York, $1.60 per ton of 2240 lb., by sail.

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

PARIS, June 16, 1878.—*Metals.*—The situation has undergone no perceptible change from a general point of view, but the tendency is a decidedly improved one in response to the sincere efforts now being made by the European Congress to secure a permanent peace. *Copper.*—Little has transpired here and the market is heavy. We quote: Chili Bars, deliverable at Havre, 167.50 francs the 100 kilos.; Common ditto, 162.50; Ingots and Slabs, 170; Best Selected, 176; and pure Corocoro Ore, 174. Marseilles is quiet. They quote: Spanish, in slabs, 160; Red Tokat, 165; small Refined Ingots, 175 @ 180; Sheathing, 192; Bolts, 197.50; and Yellow Metal Sheathing, 187.50. *Tin* has been inactive and nominal here. We quote: Banca, 180 francs the 100 kilos.; Billiton and Straits, 170; and English and Australian, 167.50. Marseilles reports but a small business, buyers holding back. They quote: Banca, 185; Straits and Billiton, 170; and English Refined, 180. *Lead.*—Dealings in this metal have been restricted. We quote: French, Belgian and German, 41.50 francs the 100 kilos; and Spanish and English, 41. Marseilles has at length begun to look up seriously. There is a rumor that the Russian government has purchased 10,000 tons of Lead. Holders have withdrawn their lots from the market in consequence, and decline all offers for futures. They quote: First Fusion, 40 @ 40.50 francs the 100 kilos.; Second Fusion, 39; and Manufactured, 46. *Spelter.*—The improvement in this market has not been sustained. We quote Silesian here 46.50 francs the 100 kilos., and at Havre 47. Marseilles is steady. They quote: Vieille-Montagne Sheet, 61; Southern ditto, 59; and old remelted, in slabs, 43. *Iron.*—No positive improvement in prices can as yet be announced, but the outlook, so far as we are able to judge, is a decidedly encouraging one in this neighborhood, and some large railroad material orders have been received and are being executed. Orders from other quarters are still lacking, but they are looked forward to with such confidence that Merchant Iron has, in anticipation of increased activity, been advanced to the asking figure of 160 francs. The foundries in the Haute Marne also advise a steadier inflow of commands. The better species of Iron in that locality are getting more and more inquired after. As yet prices have shown considerable irregularity there, but as it is well known that consumption is running ahead of production in the district, buyers show more anxiety to operate. There is nothing of special interest in the districts of Central France. The Iron masters there were in hopes that the government would have some commands for them which would be quite welcome, but they have so far waited in vain. In Lorraine the stocks of Pig Iron are beginning to run low. They quote the same 62, but a large contract has gone somewhat lower, they assure us, at 61. Iron production in the department of the North has been curtailed; the stocks of Sheet Iron there are altogether excessive, hence the curtailment. We are informed, however, that some works there have just received important orders. *Coal* still remains in a cheerless situation.

BELGIUM.

(Revue Universelle).

BRUSSELS, June 16, 1878.—*Iron.*—Local politics have interrupted business during the week. The general aspect from an international point of view is, however, a more cheerful one. It is hoped that the European Congress now assembled will, without humiliating in an undue manner any one of the parties immediately interested, arrive at a solution insuring many years of peace, thus enabling financial men, manufacturers and merchants to pursue their calling undisturbed by apprehensions of a general conflagration. No country has greater need of security in the future than ours, place 1 as we are midway between the most warlike nations of Europe and at the mercy of either of them in the event of a general conflict. If to be a small nation has certain advantages, these are lost when the geographical position of a country like Belgium leaves the door open for an inroad from all quarters. The labors of the Congress are therefore duly appreciated here, and if successful they will restore that confidence which the experience of the past 12 years had singularly shaken. With the political future of Europe placed on a firm basis once more we may reasonably look forward to a solid revival of business, the more so as crops in Europe are on the whole promising a good average yield, and we need not apprehend serious labor troubles if bread is cheap. Prices of Iron and Coal are low and so are wages, and Belgian iron masters will be in a position enabling them to compete advantageously with other nations of Western Europe. We do not believe we are too sanguine in predicting better times in the near future.

GERMANY.

(Borsenhalle).

HAMBURG, June 15, 1878.—*Metals.*—Political matters are still exceedingly uncomfortable, but the bad effect of late occurrences is gradually wearing off, and we begin to breathe a little freer, the more so as the Congress at Berlin has commenced its all-important labors, and as there are strong hopes of its accomplishing all that is wished for. There are indications that speculators will be on hand to produce greater liveliness in metals from the moment that a peaceful solution shall become apparent. In one article this tendency has manifested itself at this early stage—we mean Spelter. *Copper* has been quiet, but greater firmness has been noticeable. We are unaltered here, and so is Stettin. Boston quotes: English and Australian, 69 @ 74.50 marks the 50 kilos., and Refined Mansfield, 74 @ 74.50. *Tin* remains dull, but unchanged. We have been very quiet here at previous rates. The same has been the case at Stettin. Berlin quotes: Banca, 70 @ 70.50 marks the 50 kilos., and English, 66.50 @ 67. *Lead.*—Nothing of special interest has transpired in this metal. Hamburg and Stettin unaltered. Berlin is steady at 16.50 for Tarnowitz, Hartz and Saxonian. *Spelter.*—Some 3000 tons have changed hands at Breslau at between 16.75 and 17 marks the 50 kilos., after a sale of Hohenlohe at 16.45. The asking price is now 17.50. Berlin quotes 18.20 @ 18.60. We are unaltered here and nominal for the want of stock. Stettin is also nominal for the same reason. The speculative purchases in Silesia show that a good summer demand is expected.

HOLLAND.

(Kock & Vlierboom.)

ROTTERDAM, June 18, 1878.—*Tin.*—Holders exhibit a tolerable degree of firmness which prevents larger transactions, and we have to report great inactivity. Of Banca some sales have been effected at 39.25 guilders the 50 kilos., and of Billiton at 37.25. These are seemingly very low figures, but only in keeping with the general aspect present and prospective. Nothing in fact can be adduced favorable to this metal. The 10,000 piculs Billiton sold at Batavia 11th inst., the telegraph informs us, went at 41.25 guilders per picul, which is equal to 37.25 guilders the 50 kilos. laid down on the dock in this city.

EAST INDIES.

(J. Peet & Co.)

BATAVIA, JAVA, May 6, 1878.—*Tin.*—On the 8th ult. 9829 piculs Billiton were sold by auction and averaged 41.64 guilders per picul. Taking freight by steamer to Holland at 35 guilders per last, and exchange on London at 12 guilders to the £, this price is equal to about £63 per ton cost, freight and insurance exclusive of commission. *Coal.*—Afloat 600 tons English. West Hartley per "Emperor" have been sold at 21.50 guilders, cash, to be delivered here and weighed on shore. There is a fair demand on behalf of planters, who appear to anticipate rainy weather during the cane-grinding season. *Freights.*—The small number of charters effected during the past month, and the low rates paid, are a sufficient indication of the present state of the market for tonnage. Looking to the future, however, we should say that there is a good prospect of remunerative employment for all comers during the approaching season, because hitherto, so far as we can learn, only a very few vessels have been chartered on speculation, and the total number of these may be confidently expected to be much less than our usual requirements. *Exchange.*—During the whole of last month there was a good demand for remittances, and as private bills were very scarce, the banks had it all their own way. First-class paper is worth to-day 12.07½ guilders the £.

AUSTRALIA.

(Mining News.)

BRISBANE, April 4, 1878.—*Tin.*—At Cooktown, in the far north of Queensland, about 40 miles from the port, a large Tin field has been discovered. The first tin from this field was shipped from Cooktown during the quarter ended April 20 last, when 7 tons and 15 cwts. were forwarded to Brisbane. The drought then stopped the carriage and slucing, but the men commenced piling wash-dirt. The rain came February and continued all that month. The roads have since been impassable, but there are 100 tons of stream Tin bagged up ready for the trains. The Tasmanian Tin fields are steadily increasing in importance and area; the islanders are overcoming one by one the fearful difficulties they have had to contend with, and the exporting of Tin from the island is now an accomplished fact, with the certainty of an increase, irrespective of prices. The Stanhope (Queensland) and New England (New South Wales) Tin field for 1877 produced last year 5034 tons of pure Tin.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

LONDON, ENG., June 18, 1878.

THE TRADE SITUATION

is decidedly a little more cheerful now that the meeting of the Congress has become an accomplished fact. Business people generally appear disposed to take a very hopeful view of the situation, although there are not wanting persons who advise us not to halloo until we are out of the wood—or, in other words, who believe that the upshot of the great European conference will be war and not peace. Public opinion predominantly takes the former view, however, with the result that there is more business doing in not a few directions and a disposition to exact higher prices on the part of smelters and other producers.

IN SOME BRANCHES

I can personally testify to a very considerable increase of sales during the past month or so. Certain of the largest ironmasters have become much busier during that interval on account of foreign and colonial orders, and several of the principal agricultural implement makers have had a great incoming of orders within the last six weeks. I believe I am correct in stating that Clayton & Shuttleworth, of Lincoln, are turning out 20 finished portable engines weekly, besides combined thrashers, &c., and have all their works fully engaged. I popped down to the Oxford Show of the Bath and West of England Society the other day and found a tremendous display of machinery and implements, many of the mowers and reapers being of American manufacture. There were several American representatives on the ground, among them Mr. Lucius J. Miller.

THE NEW IDEAS

embodied did not, however, strike me as being very numerous, nor were they of a revolutionary character. They consisted chiefly of variations of one and two-wheeled reapers, chaff-cutters and pulpers, and all the *variorum* of an implement dealer's stock in trade. There was a remarkable dearth of "notions," nevertheless, a fact which I place on record here for the purpose of stirring up the inventive genius of some of your people. The "Royal" show will take place at Bristol in July, and will be on a great scale. The forthcoming novelties for production thereat will, it is whispered, include a patent "hedge-cutter," several new milk cans, a selection of mowers and reapers, washers and other goods.

LOCK MAKING BY MACHINERY

has been commenced at Willenhall by Messrs. Vaughan Bros., who have also set up the necessary plant and machinery for producing keys by the same means. As all the parts in either case will be interchangeable, it is set forth that there will be great advantages in this respect alone, irrespective of the merits attendant upon the interchangeable principle *per se*. *The Ironmonger* of June 15 devotes a great deal of space to a full description of the new factory.

GERMAN COMPETITION IN SCISSORS

is again written about by a person who signs himself "Twenty-seven Years in the Trade," and who gives some rather plain particulars as to the German goods. He says:

"Except in the highest price of German scissors it is a misnomer to call them forged; they are pressed or stamped in dies to give them the pattern. The late George Oates, of Sheffield, about twenty years ago tried to introduce the system, but it failed. I believe Mr. Thomas Hague, who bought the business, has some of these dies still in his possession. Cheap 'run-steel' scissors, or little better than iron, are certainly produced and sold by the Germans in very large quantities in this and other countries. But let us take, for instance, an article in the trade which is always saleable and produced by most Sheffield houses in as large quantities as they can get. I allude to the 4½-inch glazed steel tap screw. For some years I have had to pay about 50 per cent. or more on the cost to what I had, say, fifteen or sixteen years ago. I have tried over and over again the different German manufacturers to produce this article. It is true they could manage to produce it at the high prices which were ruling, but even then the scissors in quality were not equal to Sheffield, and of course we always give the preference to quality. I have sold thousands of gross of scissors, and my experience among buyers who know what they are about is, there are no scissors like the Sheffield ones. If you introduce a showy German article at a low price, nine times out of ten you have only to say it is German and the shopkeepers won't have them. Only ask a jobbing cutler who takes in grinding. He will tell you he hates the sight of them, and it is robbing his customer to charge him even for grinding. Of course, these remarks respecting German scissors are only intended to apply to the flood of rubbish with which the market has lately been deluged. With regard to the best polished scissors, they do send them out well ground and well finished, but then the price is nearly the same as those of the best Sheffield houses, so there would be no advantage in buying them. I think our own men are very short-sighted in restricting to too great an extent the number of hands in the scissor trade. Forgers and grinders, at present prices, if they are kept at full work, earn such wages as would astonish some of our London operatives. On the whole, I come to the conclusion that at present Sheffield has nothing to fear from German competition in the scissors trade. Although Sheffield has put the prices very high, and given the Germans every opportunity, yet for the past seven years I have not been able to find German forged goods (not stamped) which can compete for quality and price with Sheffield."

AMERICAN IRON CASTINGS

are also written about in the columns of one of the weekly trade journals, by a "Foreman Moulder," who says that if a founder will use stereotype plates for every pattern, use good and new metal instead of rubbish, and not allow "drumming," as perfect castings as those made in America will result. I am bound to acknowlede that we in this country "do allow" that you Yankees *can* turn out some admirable castings.

THE GREAT COMPANIES

of the City of London have just inaugurated a splendid scheme for the furtherance of technical education, by the embodiment and working out of which there will doubtless be a marked impetus given to many of the leading industries of the country. They will found a large central school in London, with branch institutions in various large towns, and will spend £20,000 a year in providing scholarships, lectures and other means for working out the scheme. Of this £20,000 over £11,000 has already been subscribed. Some of these Livery Companies are enormously wealthy, and have large accumulated funds.

YET ANOTHER "INTERNATIONAL EXHIBITION,"

in London, has been set afoot, to take place in 1879, and the scheme has progressed so far that a committee has been formed. I don't know much about the scheme as yet (nor does anybody else), but even in the absence of particulars I venture to predict its ultimate failure. Such "shows" have been done to death, and everybody here, at all events, has a whole-souled, hearty dread of them.

THE CURRY-COMB TRADE

is still carried on at Willenhall, but the American market for those articles has now virtually expired. As a natural sequence the production is 50 % less than it used to be—the present principal markets being the East Indies (for cheap goods), Australia, New Zealand and the Cape (which buy good pressed articles), France and Germany, each of which take special kinds of these combs. The Willenhall people still boast that it is your high tariff alone that prevents them from sweeping your market—despite all the facilities your makers have for cheap and economic production.

SCOTCH PIG IRON

has hardly been so brisk during the past week, owing to the absence of speculation in the warrant market, despite which circumstance, however, makers' brands have not become quotably weaker. There are now 176,877 tons in Connal's stores, as against 139,867 tons at same date this year, an increase over last week of 1070 tons. There has been a decrease of 23,722 tons in the aggregate shipments up to date this year, but an increase of 2525 tons in the total imports into Scotland of Cleveland pig. At the present time there are 90 furnaces in blast in the Scotch iron districts, against 109 last year.

Writing from Glasgow June 15th, James Watson & Co. said: The Scotch pig iron market has not been so buoyant this week, prices being rather lower. The opening price on Monday was 50/, 14 days, and from this it declined to 49 7½ prompt, closing in the afternoon at 49/9, cash. On Tuesday morning it was firm, from 49/10 to 50/, cash, declining again later in the day to 40/10 per ton. On Wednesday it was very quiet at 49/9 @ 49/10, cash, and yesterday it opened flat at 49/8, cash, improving to 49/9½ per ton. To-day it has again been stronger, 49 10 @ 49/11, cash, having been paid, closing buyers at the latter figure, sellers at 50/ per ton. Shipments last week were 7008 tons, against 7733 tons in the corresponding week of 1877. We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow.....	50 6	49/
Gartsherrie, "	58/	53 6
Coltness, "	61/	55/
Summerlee, "	56 6	50 6
Langloan, "	58/	52
Carnbroe, "	51 6	49/6
Calder, at Port Dundas.....	57/	49/6
Glengarnock, at Ardrossan.....	56/	51/3
Eglinton, "	51/	49 6
Dalmellington, "	51/	49/ 6
Shotts, at Leith.....	59/	55 6
Kinneil, at Bo'ness.....		51/

The figures of William Colvin & Co. and John E. Swan & Bros. (Limited) are similar to the foregoing.

MIDDLESBORO' IRON TRADE.

The usual official monthly report of the Middlesboro' Chamber of Commerce runs as follows: "During the month out of 91 furnaces erected in the Middlesborough district 67 were in operation. The makers of pig iron here have been better employed than those elsewhere in the North of England, for none of the 16 establishments are totally closed, while 11 out of the 21 works in the other parts of the North are standing. Only five firms have all their furnaces going, however. The output of Cleveland pig iron during May was 109,985 tons, or 3104 tons more than in April, and in addition there was a quantity of hematite and spiegeleisen produced. The total stock of pig iron in the district at the end of May was 276,782 tons—makers' stocks 160,608, public stores 66,325 tons, and makers' stores 49,849 tons. There were decreases under every head—viz., 15,794 tons in makers' stocks, 1345 tons in public stores, and 259 tons in makers' stores. The shipments in the aggregate amount to 74,043 tons. The prices ruling at date for G. M. B. pig iron are 43/ for No. 1, 39/ for No. 3, and 38/ for Gray Forge, all less 1 per cent., for f. o b. Tees, or in trucks at works. The quantity of manufactured iron shipped from the port during the month was 21,861 tons, only 9504 tons being sent outside the United Kingdom. This included 4290 tons of rails, bolts, spikes, fish-plates, crossings, switches, chains, &c., for Australia; 1832 tons of chairs, pipes, and bridgework for India; and 745 tons of pipes, plates, sheets, and bar-iron for Scotland. The trade has been in a very languid condition, and in no department has there been much new business transacted. Plate makers have kept their works fairly in operation, but it has been on old orders. Their quotations have touched a point lower than at any time during the current depression, and at the close of the month not more than £6. 2 6 less commission was usually obtained for ship plates. For boiler plates there was a moderate demand on Staffordshire and Lancashire account. Angles have been in poor request at £5. 12/6, and so have common bars at £5. 10/. Only one rail mill has been in operation, and such is the slackness in the demand for iron rails that Messrs. Hopkins, Gilkes & Co. (Limited) are about to adapt their large rail mill for the manufacture of plates. The Britannia Iron Works still remain closed, but it is expected that the Skerne Iron Works Company will not be long in commencing work. There is also a probability of the Erimus Iron Works, now the property of Mr. Muller, of Middlesborough, resuming operations. The Howson & Godfrey puddling furnaces, in use experimentally, have given excellent results, and produce a good quality of iron from all Cleveland pig iron. The Eston Steel Works of Messrs. Bolckow, Vaughan & Co., have been producing rails very steadily, and during the month among others 1200 tons of rails were shipped to Italy. Orders have been more plentiful for pipes, but while some firms have been well employed, others have not found contracts so good to get. Bridgework has been in fair production, as have also cast-iron chairs. The general ironfounders have had comparatively little to do. Bolts and nuts have not sold freely. The engineering establishments have been tolerably well occupied, and at the wire mills there has not been much of which to complain. The output of cut nails has been about equal to the average. Altogether there has not been so much depression in these miscellaneous iron industries as there was during the winter half year. The shipbuilders have kept their yards briskly going."

THE TRADES OF SHEFFIELD

are for the most part in much the same quiet state as when last reported upon by me. In the iron market matters maintain the pre-existent dullness out of which it appears exceedingly difficult to move. The best pig irons of the neighborhood, such as Thorncliffe, Sheepbridge, Clay Cross, and Butterley, are pretty fairly upheld in price, but they are not selling largely by any means, the chief output for them being in other parts of the country, such as Lancashire and Staffordshire. Merchant irons are unaltered all round, at about £5. 12/6 @ £5. 17/6 for common bars. In the cast steel branches all is quiet, neither Jessops, Firths nor Sandersons' being other than moderately engaged. The Bessemer Works are busy, however, on forgings, billets for wire and rails. The New South Wales government is alleged to have made a contract for rails at £5. 17/6, f. o. b., which may be taken to mean £5. 10/ at the works, a quotation at which nobody need expect to grow rich. The file, saw, and cutlery industries are not busy as a whole, although some of the larger houses report themselves to be fairly well engaged. A good deal of fine table and pocket cutlery is going to the States and Canada.

STAFFORDSHIRE AND BIRMINGHAM

present no novelty in respect of iron, of which prices are unchanged. A large admiralty order for best chain cables has been awarded to Noah Hingley & Sons, and another house has a similar offer in negotiation. The India Office and the War Office are each inquiring for 4500 pickaxes and the same number of shovels and spades. These tenders, however, are only sent out to certain chosen firms, so that it is only by favor that any house has a chance of competing. This is an extraordinary way of doing business, but it is so, and all efforts hitherto made have failed to break down the barrier. A Birmingham correspondent cites instances in which goods are being invoiced to Spain and the South American markets at less than cost prices, and also states that Messrs. Field & Son, of that town, have just taken an order for 20,000 of their new patent registered gas burner. In connection with the hollowware trade I hear that one of your large houses is about to establish a branch manufactory in this country.

SOUTH WALES AND MONMOUTHSHIRE

are doing a slow business in iron, last week's total foreign shipments from Cardiff having been next to nothing. In the Swansea district a number of the rail makers are on the

qui vive for a foreign order for 100,000 tons, which is rather vaguely indicated as being about to be placed. The coal and patent fuel trade is fairly steady.

THE METAL MARKETS

have relapsed a little since the date of my last report, owing to the increase floating stocks and the political variations *de die in diem*. *The Ironmonger* reports: The *Copper* market has been fluctuating, with less firmness. Stocks are on the increase. Quotations are, for Chili bars, £64; at Liverpool, £61, /15. Wallaroo, £73; Burra, £71; English cake and ingot, £68. /10 @ £69; sheet and sheathing, £73 @ £75. The standard for ore has advanced £3. /3. At the Cornish sales the average price was £3. /15 per ton. Copper mines have consequently been firmer and more active. *Tin* is less firm, and prices are slightly lowered. Stocks are large, and with the promised increase in yield in Tasmania there does not seem much prospect of reduction. Australian and Straits are quoted at £62; Banca, at £64 @ £65 English ingot, £66; ditto brass, £67; ditto refined, £69. Tin mines are better, and the standard for ore has advanced 20/ per ton. Tin plates are still weak, and although the quotations are stronger, viz., 16/ @ 17/ for coke boxes, and 18/6 @ 22/ for charcoal, a large quantity is being sold at much lower rates. *Lead* continues heavy, but a better feeling is observable. Prices are—English pig, £16. 15/; W.B., £17. /10; sheet and bar, £17. /15; Spanish, £16. 7/6 @ £16. /10. Lead mines are firm, and are advancing. *Zinc.*—At the fortnightly sale held on Thursday by W. T. Sargant & Son, 120 tons were sold at £20. 5/ net cash. *Quicksilver* continues dull at £7 per flask. *Spelters* at £17. 12/6 for Silesian, £21 for English, and £21 @ £22. 11/ for sheet zinc. *Brass Wire*, 7½d. @ 8; sheets, 8¼d. @ 8¾d; yellow metals, 6½d. @ 7d.

The official report of the London Metal Exchange is: "*Copper.*—A further public sale of Australian has been announced for June 18, viz., 330 tons Cobar cake and 92 tons G. W. Co. ingots; market quiet for G. O. B. on the spot, with sellers at £63. 10/; good demand for forward bars at £64; no transactions reported in Australian; English tough, £68. 10/ @ £69. 10/; select, £70 @ £71; strong sheets, £75 @ £77. *Tin* firm; Straits and Australian at £61. 10/; English ingots, £65. *Iron.*—Scotch pigs, £49. 10/, cash. *Lead* firm; £16. 15/ @ £17 for English; soft Spanish, without silver, £16. 10/. *Spelter.*—£17. 12/6 @ £17. 15/ for ordinary brands. *Zinc.*—No quotations. *Quicksilver*, £7. *Antimony*, £49 @ £49. 10/

I take the following from Messrs. Sanders Bros.' monthly iron and metal circular, London, June 13:

COPPER.

Our present quotations are:

		£. s. d.		£. s. d.
Ores and regulus.....	℔ unit.	0 12	0 @	0 12 6
Chili bars.....	℔ ton.	63 10	0 @	65 0 0
English tough...	"	69	0 0 @	0 0 0
" selected.....	"	71	0 0 @	0 0 0
" manufactured..	"	73	0 0 @	0 0 0

Compared with same date 1877:

		£. s. d.		£. s. d.
Ores and regulus.....	℔ unit.	0 13	6 @	0 14 0
Chili bars.....	℔ ton.	68 10	0 @	69 10 0
English tough.....	"	74	10 0 @	75 10 0
" selected.....	"	76	0 0 @	78 0 0
" manufactured..	"	80	0 0 @	82 0 0

	Month ended May 31.		
	1876.	1877.	1878.
	Cwt.	Cwt.	Cwt.
Exports to U. S. unmfd...	....	80	....
" other conntries	27,394	16,926	44,080
" U. S. manuf'd.	9	....	112
" other countries	16,559	22,161	21,292
	Five months ended May 31.		
	1876.	1877.	1878.
Exports to U. S. unmfd ..	20	100	....
" other countries	99,502	89,002	186,747
" U. S. manuf'd .	189	814	709
" other countries	83,392	92,793	93,999

Copper was at the bottom when we last wrote, and rapidly thereafter advanced £2 per ton, without much business being done in Chili sorts, the rise being too rapid, then with good consumptive and some small speculative business we improved up to £65 for Chili bars and £71 for best selected. With the intervention of the Whitsuntide holidays and cessation of business prices receded about 20/ per ton all round, at which we close steadily as above, with decided disposition to purchase at any further trifling decline in values. The charters for the first half of May were 1300 tons, and for the second half 2000 tons, the rise in values on the West coast not being quite so rapid as at home. The total figures, stocks and afloat, were, on the 1st inst., 46,438 tons, being a decrease of 193 tons on the previous month. The prospects for copper, with peace, seems decidedly favorable at present. English copper was dealt in to a large extent at slowly advancing prices, but consumers generally will certainly be buyers again next month. Australian copper was neglected comparatively, and hardly got a share of the current business. Burra now quoted 71/; Wallaroo, £72. 10/. Outside brands neglected and at nominal rates. Public sales are announced to take place on the 18th inst., of about 600 tons Wallaroo, 300 tons Burra and 400 tons outside brands of Australian.

RAILS.

Iron, £5 for heavy sections, compared with £5. 5/ same date last year; steel, £6. 5/, compared with £6. 15/ same date last year.

	Month ended May 31.		
	1876.	1877.	1878.
	Tons.	Tons.	Tons.
Exports to United States..	....	1,376.	....
" other countries.	42,931	52,473	33.875
	Five months ended May 31.		
	1876.	1877.	1878.
Exports to United States..	....	2,112	31
" other countries.	125,139	137,093	157.774

Iron rails continue dull, with little disposition to purchase them, steel being so much better value for money at existing rates. Steel rails are steady, in fair demand, without variation in price since our last.

SPIEGELEISEN.

£5 ℔ ton for 20 % English and foreign, with dull demand and a tendency to lower rates.

FERROMANGANESE.

Unchanged in price, with slow demand, but no disposition to reduce limits.

LEAD.

	Our present quotations are;	£ s. d.	Compared with same date, 1877.	£ s. d.
WB.....	per ton	18 0 0		21 10 0
LB.....	"	17 0 0		20 10 0
Ordinary brands	"	16 12 6		21 0 0

	Month ended May 31.		
	1876.	1877.	1878.
Exports to United States..	....	1,376.	....
" other countries.	42,931	52,473	33.875
	Five months ended May 31.		
	1876.	1877.	1878.
Exports to United States..	....	2,112	31
" other countries.	125,139	137,093	157.774

The volume of business done on the month has been good, but supplies on all hands are so large that prices have given way again, and lower limits still seem probable.

REGULUS OF ANTIMONY

£49, compared with same date last year £48. Inquiry limited but sufficient just to sustain prices.

TIN.	Quotations to-day.	Same date, 1877.
	£	£ s. £ s.
English L. & F. Ingots..per ton	65	72 10 to 73 0
" Bars in Barrels. "	66	74 0 to .. .
" Refined "	67	75 0 to .. .
" Straits "	61	68 0 to 69 0
" Australian "	61	68 0 to .. .

	Month ended May 31.		
	1876.	1877.	1878.
Exports to United States...cwts.	1.008	4,493	1,235
" other countries... "	11,372	10,525	11,153
	Five months ended May 31.		
	1876.	1877.	1878.
Exports to United States...cwts.	4,760	13,844	4,383
" other countries... "	41,921	34,652	45,876

The imports of Tin into England have been:

	Month ended May 31.		
	1876.	1877.	1878.
Cwts.....	22,401	37,445	38,597
	Five months ended May 31.		
	1876.	1877.	1878.
Cwts.....	152,871	134,500	161,968

The figures of tin are almost unchanged on the month. Deliveries were a full average but arrivals were large, and speculative purchases, based on the peaceful aspect of politics, failed to induce a rise of more than £2 per ton, viz., to £63 for Straits and Australian, which has since been lost, however, and we close with a flat market at above prices.

The following statement shows the present position of tin:

	April 1, 1878. Tons.	May 1, 1878. Tons.	June 1, 1878. Tons.	June 1, 1877. Tons.
Foreign tin in London..	8,870	9,292	9,815	9,501
Banca and Billiton in Holland....	3,218	2,998	3,179	2,580
Stocks.....	12,088	12,290	12,994	12,081
Banca in hands of the Dutch Trading Co. unsold.....	204	506	375	220
Foreign tin afloat for Europe.....	3,782	3,908	3,245	3,810
Total.....	16,074	16,704	16,614	16,111

SPELTER.

Ordinary Silesian, £18, compared with £20. 5/ @ £20. 10/ same date last year.

A dull, dragging market with only moderate business done, showing a gradual fall of 10/ per ton, closing flat.

TIN PLATES.

	Compared with same date 1877.
I. C. Coke, ordinary brands...	15/ 17/6
I. C. Coke, best brands.....	17/ 19/
I. C. Charcoal, ordinary br'ds.	18/ 20/
I. C. Charcoal, best brands...	19/ 21/

	Month ended May 31.		
	1876.	1877.	1878.
Exports to United States..Tons.	7,285	10,472	8,994
" other countries.....	4,827	4,645	4,614
	Five months ended May 31.		
	1877.	1877.	1878.
Exports to United States..Tons.	36,109	43,037	41,992
" other countries.....	17,755	20,337	19,323

In our last issue we referred to negotiations that were pending for a general reduction in the make of tin plates for the remainder of the present year, and we intimated that there was every probability of some arrangement being agreed upon. Meetings were held, and a proposal to curtail production one-fifth met with the approval of a large majority of the makers, and notice was issued to the effect that such reduction would take place. This announcement, however, appears now to have been premature, as, while the negotiations were in progress, some very large sales were made by one or two of the most important makers of coke plates, who found themselves, at the last moment, so heavily booked as to render working full time absolutely necessary for a fulfillment of their engagements, and their withdrawal from the proposed combination has led to its entire collapse for the present. There is no doubt that the prospect of a decreased production stimulated demand, and enabled makers, for the time being, to obtain slightly better prices; but it remains to be seen whether the improvement will be maintained when existing orders are worked off, or whether we shall revert to lower figures again. In favor, of course, of the former view, is the probability of an amicable settlement of the Eastern question, now that the Congress has assembled, tending to a more healthy feeling throughout business circles generally, while on the other hand it is incontestable that supply is very much in excess of demand, and that without a substantial revival in trade, or some arrangement whereby production is reduced within the limits of demand, prices must inevitably recede. Transactions in plates on a very considerable scale, both with the Continent and America, have taken place during the past few weeks, the bulk of the business being in cokes at 14/9 @ 15/, and the latter price is now generally asked for ordinary brands. For halfcross specification charcoal tin plates the quotation is 18/, and charcoal ternes we call 17/. Speaking generally, the makers are filled with orders up to about the end of July.

INDUSTRIAL ITEMS.

VERMONT.

The Colby Wringer Company of Waterbury are doing a fair business in the manufacture of their improved wringer and "Little Washer."

The Lane Mfg. Co. of Montpelier report business better the past six months than for five years previously. Their work is mainly on mill machinery used in the manufacture of lumber.

The Steam Stone Cutter Co. of Rutland have furnished eight of their machines to F. S. Gross, of Lee, Mass., who has the contract for furnishing the marble, amounting to nearly a million feet, for the city buildings of Philadelphia. They have also recently shipped one of their machines to the Middlesex quarry in Connecticut.

NEW HAMPSHIRE.

Business at the Manchester Locomotive Works, Manchester, is improving. These works have recently received orders for one of the Amoskeag fire engines from San Francisco, Cal., and one also from Rockland, Me.

CONNECTICUT.

The old Bridgeport Iron Works building, which has been idle for several years, is now the theater of busy workmen, and the whirr of machinery has superseded long-time stillness. The present occupants are Thomas Coulter and Hector McKenzie, who, under the firm name of Coulter & McKenzie, have for about a year conducted a successful business as machinists near the corner of Water and Thomas streets. These quarters becoming too small for them they moved to the corner of Golden Hill and Water streets and took possession of the Bridgeport Iron Works building on the first of this month, where, in addition to the machinery on the premises, they have added a number of new machines.

Landon & Co., iron founders, of Chapinville, in Salisbury, have failed. Their liabilities are between $100,000 and $200,000. Horace and George Landon comprise the company.

The Mascoma Edge Tool Company have made 2700 scythes the past year, the largest business ever done in their shop.

The Sharps Rifle Company of Bridgeport recently received an order for 1300 of their military rifles from the State government of Kentucky, and are also in daily expectation of a foreign order for 10,000.

MASSACHUSETTS.

The new Acushnet Iron Foundry, New Bedford, is one of the busiest concerns in that city.

The Ames Manufacturing Company at Chicopee, in addition to other business, are turning out 1000 saber swords a day on an order for 200,000 from a foreign government.

At the annual meeting of the Holyoke Water Power Company, week before last, a 5 per cent. semi-annual dividend was declared and the following officers elected: President, George M. Bartholomew; agent and treasurer, W. A. Chase; directors, M. D. Ross, John B. Stebbins, J. J. Goodwin, Charles N. Beach, Roland Mather and D. L. Harris.

The National Needle Company of Springfield are about bringing suit against the Waterbury Needle Company, of Waterbury, Conn., for infringement of one of their patents and their trade-mark. The penalty for the latter offense is liable to be a fine of $1000 or two years' imprisonment, but for infringing a patent only civil damages can be collected.

At the annual meeting of the Athol Machine Company the following officers were chosen: D. W. Houghton, W. D. Smith, L. S. Starrett, Geo. T. Johnson, D. A. Newton, A. Bangs, Athol and A. W. Goodman Dana, directors; D. A. Newton, secretary; J. S. Parmenter, treasurer. The company is reported to be in a flourishing condition under the management of D. A. Newton.

Jerome Wheelock, of Worcester, has just completed arrangements with an eminent firm of French engineers for the manufacture of the Wheelock improved automatic cut-off engine in France. The terms are most favorable to Mr. Wheelock, and the sale is due to the excellent exhibit he is making at the Paris Exposition, where his engine is driving the machinery of the American department. Mr. Wheelock, who has been abroad for several months, is expected home in July. His works at Worcester are full of orders for engines, and more than the usual number of hands are being employed to keep up with the demand.

NEW YORK.

The stove foundries in this city will probably all shut down next week, resuming operations on the Monday after the Fourth. The foundries have been running very steadily since the general resumption in the spring, most of them on full time, and with a large complement of hands. The outlook of the stove trade is said to be very favorable, and steady work will undobtedly be the order again after July 8.—*Troy Times, June 28th.*

Work has been suspended at the Bessemer Steel Works and the Rensselaer Works, Troy, to enable the proprietors to make necessary repairs and alterations. The capacity of the Rensselaer Works will be largely increased, and the mills will be started up again in about two weeks.

The ore mines lately opened by Mr. James Chapman, of Putnam Valley, in old "Put," three miles from Annsville in Canopus Hollow, near West Point, have been sold for $16,000 to Messrs. Tower and Bech, of the Poughkeepsie Iron Company, who are also the owners of the extensive mines and works at the Forest of Dean, which they have successfully operated for 20 years. The ore found in Canopus Hollow possesses, it is said, valuable qualities found in few mines for the making of steel.

Thursday, the 20th ult., the blast furnace property at Charlotte, belonging to the defunct Rochester Iron Manufacturing Co., was sold at auction, sheriff's sale. It was bid by Henry C Roberts & Co., coal dealers, for $7,257—hardly enough to satisfy their judgment against the corporation.

At no time during the past five years has there been such a rush of business as is at present apparent at the car works of Gilbert, Bush & Co., on Green Island. Every track in all of the different departments is occupied, and in some of the shops the force is doubled.

The Pitts Agricultural Works at Buffalo are running full time with a full force—200 men—and are piling up a large number of thrashing machines. The business thus far has been better than that of last year.

English capital is reported to be going into a cutlery factory at Syracuse.

The Walter A. Wood Mowing Machine Co. does not appear to be affected by the hard times. The mills are now running night and day, and a force of 1200 is employed, turning out 175 machines every 24 hours. The total production this year, it is believed, will be about 30,000 machines. The company declared a semi-annual dividend of five per cent. last Thursday.

MARYLAND.

The puddling mill at the Cumberland Iron Works, with eight furnaces, went on double turn last week. The 16-inch train of rolls in the bar mill resumed on single turn only. On Thursday the 12-inch train in the same mill was added. Sixty puddlers and helpers are at work, the whole number of hands employed in the puddling department being about 85. Fifteen hands are now employed in the bar mill, and 13 were added, making the whole number of persons employed in the mill, exclusive of laborers and clerks, nearly 115 persons. All the iron now being made is consumed in the bar mill. It is not yet known when the rail mill will be started.

PENNSYLVANIA.

The Sheridan furnaces, owned by William M. Kaufman & Co., are turning out now about 300 tons of iron a week, which is nearly all the best No. 1 A. The demand for this iron is strong, and a large part of it is sent to San Francisco and to Montana territory. The furnaces are working very well, being admirably located, and notwithstanding the dull times, yield a profit to their owners. Everything about them indicates industry, thrift and good house-keeping. Piles of iron ore, coal and limestone in the furnace bins, fine buildings, good fences, and farms in the highest state of cultivation, greet the eye of the traveler as he passes by Sheridan in the cars.—*Reading Eagle.*

We clip the following from the Sharon *Herald* of the 28th ult.: From Kimberly, Carnes & Co., or rather from the New Mill, we have nothing new to report. The puddle mill, nail plate mill and nail factory were off all week; nail plate mill and factory went on Monday of the present week. In the lower mill, old hoop mill and guide mill double turn; bar mill on part of the week; and that is all, except rumors, in which we don't take stock. It is generally accepted as a fact that everything will soon be as it ought to be. At the Westerman Mill, same as last week—everything steady as clockwork, not even Madame Rumor having any bad news. The lining in No. 1 blast furnace is in good condition—good enough for another blast—and, with a new hearth and boshes, might again astonish old furnacemen with her products. Nothing particular from the Stewart Iron Works—still making iron and shipping it as fast as made; but they, too, happen to ship it, so far, to the right kind of places. Nothing gloomy from Sharpsville or Middlesex—still working and doing well.

The Phœnix Iron Works are receiving plenty of orders at present.

A contract for tightening up of the bridges and trestle works on the Philadelphia and Newtown Railroad has been awarded to Levi Focht, contractor, of Birdsboro.

The Bethlehem *Times* says: Some of the furnaces in the Lehigh Valley will run short of coal under the allotment of coal for this month made by the coal combination. The supply is entirely inadequate. The Lehigh operators are solicitous to do all in their power to keep the furnaces supplied, and will request Dr. Linderman and Mr. Wilbur, the Lehigh members of the board of control of the coal combination, to ask for a further allotment for this month.

Mr. McDowell, of the firm of Leibrandt & McDowell, from Philadelphia, is at Moslem, making improvements and drawings for putting the furnace in blast. Mr. John Birkenbine, from Lebanon, is there, making drafts for changing the furnace to a capacity of 185 to 200 tons of iron per week.

All but 30 of the iron spans for the roof of the Gautier Steel Company building, at Johnstown, are now in position, and the work of covering it will be commenced at once.

On Tuesday, the 24th ult., the National Locomotive Works, owned by Mr. Bailey, who failed recently, were sold at sheriff's sale. The works are located in New Haven, a small town directly across the river from Connellsville, Fayette county. They are quite extensive, and are fitted up with the most approved machinery. In addition to the works themselves, there were also several unfinished narrow-gauge locomotives on hand, a large lot of finished and unfinished brass, wrought and cast ironwork, all the small tools necessary for the various departments of locomotive building, together with a lot of material on hand. In addition to this all the orders on the books were sold. Good judges estimated the property as worth, at least, $35,000 or $40,000. It was knocked down to Mr. E. K. Hyndman, superintendent of the Connellsville road, for $2500. A lot of scrap was purchased by Mr. McGarvey, of Pittsburgh. The works are capable of turning out 24 complete narrow-gauge locomotives annually. With a little addition to the machinery the capacity can be increased to 30 locomotives annually, varying from 30 to 35 tons. It is proposed to start up the works again, thus giving employment to about 100 men. The works hereafter will likely be run by a stock company. In addition to the building of locomotives, the concern enjoys a good trade in repairing engines and doing jobbing work.

The newly opened ore mines on Bailey's and Lesher's land are doing well thus far. On the 21st ult. the first ore was shipped to Lenhartsville, consigned to Spang, Erb & Co., to be used in Maidencreek furnace.

The rolling mill of the Philadelphia and Reading Coal and Iron Co. will stop for ten days during the present month, and most if not all of the mills in that vicinity will do the same.

A pair of new shears will be placed in the rolling mill of the Messrs. Potts Bros., Pottstown, at an early date.

The works of the Pottstown Iron Co. are idle this week.

PITTSBURGH AND VICINITY.

The employees of the Edgar Thomson Steel Works will have a vacation from July 4th to July 8th. During the interim the necessary repairs will be made.

Twenty-two shops are now in full operation at the Tumbler Works at Rochester, many of them working at night and employing a larger force of hands than ever before.

Several of the South Side glass houses suspended operations last week for a brief period.

Duncan & Son's press house, on the South Side, is running steadily.

A. Leggate's spring and axle works, Allegheny City, are on single turn.

At the Union Iron Mills of Messrs. Carnegie Brothers & Co., of Pittsburgh, there have been rolled a number of 12-inch iron girders, 41½ feet long and each weighing 1783 pounds, for the Black Diamond Steel Works of Messrs. Park, Brother & Co. They are designed for bracing three steel melting gas furnaces of larger capacity than any ever erected in this or any other country.

Smith, Sutton & Co.'s steel works in Allegheny City shut down last Saturday for a week or ten days. During the stoppage they will take stock.

VIRGINIA.

Messrs. Jos. Hall & Co. of Richmond, in addition to their large contract with the United States government for over 1,000,000 pounds of castings last year, have closed another contract with the government for over 300,000 pounds.

WEST VIRGINIA.

A new chimney house has been started at Wheeling by Peter Sweeney. They propose to put fire in on the 15th of July. The furnace is a 6-pot one, and will employ 15 or 16 shops.

Sweeney & Son, of the Superior Machine Works, Wheeling, shipped a large car load of mowing machines West last Friday.

The Arlington Stove Works, Wheeling, have shut down for a short vacation.

OHIO.

The Eureka Steel and Iron Works of Black, Daker & Co. at Wellsville are expected to start up in July. They propose to manufacture steel for shovels and plows.

The heaters and rollers of Brown, Bonnell & Co., Youngstown, went on a strike Saturday, the 22d inst., in accordance with the notice of a week ago.

W. B. Pollock & Co.'s Boiler Works at Youngstown are running full time. All hands employed, with plenty of orders ahead.

The Youngstown *Vindicator* says: Cartwright, McCurdy & Co. have signed the sliding scale, and their puddlers have gone to work. Brown, Bonnell & Co. have not signed.

The Martin's Ferry *News* says: The Agricultural Implement Works of L. Spence & Hoyle Bros. are both working up to their capacity to supply orders. The Buckeye Glass Works have been giving very satisfactory results the last two weeks, both as to quality and quantity of ware.

The Garry Iron Roofing Company, Cleveland, have received orders to put their popular iron roofing on the I. P. and C. R. R. shops, at Peru, Ind., which will replace those recently burned at that point.

Messrs. Younglove & Co., of the Cleveland Agricultural Iron Works, have lately received orders for 500 cider mills and 1000 corn shellers, besides orders for large amounts of agricultural machinery.

The Youngstown *Vindicator* says the Girard flour mill is running full capacity.

The Church Hill Coal Company are mining and shipping about 500 tons of coal per day.

The old mill on the Mahoning River, near Edenburg, which has stood still since the canal was abandoned, is now being refitted to be run by steam by its present owner, Samuel Harnitt, who is the successor of John D. Rainey, by whom it was built.

Messrs. Menke & Co., machinists and model makers, have recently opened a shop at No. 14 East Seventh street, Cincinnati, where they do all kinds of light machine work and pay special attention to model making. They also deal in and repair light and heavy machinery of all kinds.

The Pomeroy Iron Company, V. B. Horton, president, of Pomeroy, have made an assignment. Liabilities, $70,000.

KENTUCKY.

The trustees of the Steubenville Water Works awarded a contract for 133½ tons of 20-inch water pipe to Dennis Long & Co. of Louisville at $24.90 per ton. The other bids ranged from $25.60 to $28.75 per ton, including one from Smith & Sons of Pittsburgh at the latter figure.

The furnace of the Norton Iron Works, Ashland, was again lit up on Thursday night, the 20th ult., and is now making from 45 to 50 tons of good iron per week.

Messrs. Thos. Meikle & Co. have recently contracted to supply their patent wrought-iron clevises for the coming season to the large plow factories in the Northwest and in the East.

MISSOURI.

Many of the stove foundries in Missouri have shut down or are running on half time.

The Helmbacher Forge and Rolling Mill Company, St. Louis, have secured some large orders and expect to run through the summer.

The St. Louis Bolt and Iron Company are as usual very busy and have plenty of orders.

The Laclede Rolling Mill, St. Louis, is still running, but will shut down during the hot season.

The Peckham Iron Company, Kinswick, are manufacturing directly from Iron Mountain ore a superior quality of blooms, which have been thoroughly tested and found to be fully equal to, if not better than, the best brands of Swedish iron. It is said that the capacity of the works is to be largely increased, and probably in connection with their furnaces for manufacturing blooms they will put in a small rolling mill for the manufacture of nail rods, wire rods, &c.

WISCONSIN.

The Eclipse Windmill Company are making some important improvements in railway water supply in the way of an improved tank valve and spout, and also a new force pump for hand or windmill use. They believe their long experience in their line of business will result in producing an article that will command the attention of engineers and meet with their approval. The company's works at Beloit have ample facilities and are now running with night and day force. Ten mills were recently shipped to Vienna, Austria, and five are billed this week for Australia. Their export shipments have been averaging about 20 mills a month. They are now at work on a contract from the Denver and Rio Grande road for 11 mills on the new extension, and have fifty other orders in their shops from some of our largest roads.

HOBART'S TACKS

MANUFACTURED BY

DUNBAR, HOBART & WHIDDEN,

ESTABLISHED 1810.

Office and Salesroom, 116 Chambers Street, New York. - - - - Factory, South Abington, Mass.

Any Kind of Wire Nails made to order from Description, or Samples.

American and Swedes Iron Tacks,

Tinned, Leathered and Large Head Carpet Tacks, Finishing Nails, Black and Tinned Trunk Nails, Miners' Copper, Gimp, Lace and Brush Tacks, Hungarian, Chair, Cigar Box and Barrel Nails, Glaziers' Points,

Iron, Steel, Copper and Zinc Shoe Nails, Patent Improved Brass Shoe Nails,

Heel and Toe Plates, Steel Shanks, and Fancy Head Nails, Silver or Japanned Lining and Saddle Nails,

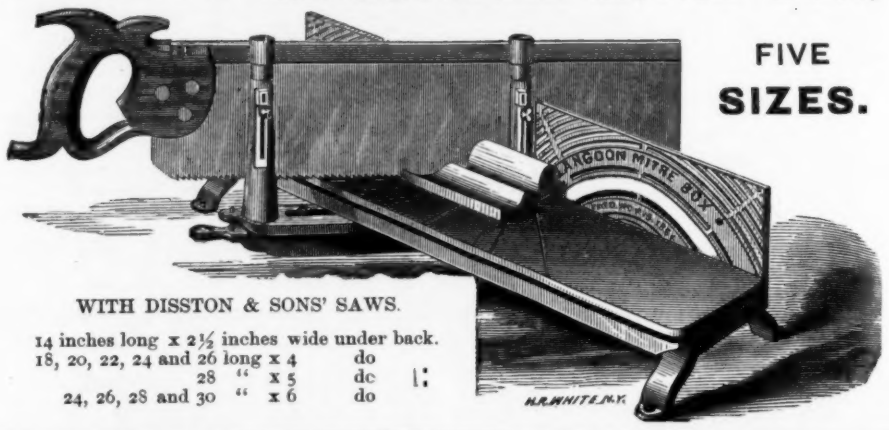
A full assortment always on hand at salesrooms, for immediate delivery if required. Odd and Irregular Sizes made to order or cut from sample at short notice. **Send for Price List.**

THE LANGDON MITRE BOX COMPANY,

Millers  Falls, Mass.,

Sole Owners and Manufacturers of the

LANGDON ADJUSTABLE MITRE BOX,



FIVE **SIZES.**

WITH DISSTON & SONS' SAWS.

14 inches long x 2½ inches wide under back.
18, 20, 22, 24 and 26 long x 4 do
28 " x 5 do
24, 26, 28 and 30 " x 6 do

All parts of each size made to interchange. Illustrated circulars (issue 1877) sent when desired.

Five sizes of Mitre Boxes. Eleven sizes of Saws. Dealers wishing to advertise furnished with electrotypes without cost.

EXCELSIOR WRINGERS

The only Wringers that conduct the water into either tub, without being changed from one tub to the other.

They wring from either tub into the other, right or left, with equal facility. Warranted to work as represented.

FOR STATIONARY TUBS.

They are made for use on square tubs, such as are principally used in cities, and are the only Wringers especially adapted for that purpose.
Send for an illustrated price list to the manufacturers,

BAILEY WRINGING MACHINE CO.,

No. 99 Chambers Street, New York.

ALSO MANUFACTURERS' AGENTS FOR

Defiance Metallic Planes, Simpson's Adjustable Vises, American Meat Choppers, Silver's Stuffers and Presses, Domestic Ironing Mangles.

SPECIAL QUOTATIONS ON THE ABOVE GOODS FOR EXPORT.

G. W. Bradley's Edge Tools.

Butchers' Cleavers,
Butchers' Choppers,
Axes and Hatchets,
Grub Hoe and Mattocks
Mill Picks
Box Chisels and Scrapers
Ring Bush Hooks,
Axe Eye Bush Hooks,
Socket Bush Hooks,
Watt's Ship Carpenters' Tools.
Carpenters' Drawing Knives,
Coopers' and Turpentine Tools.

FOR SALE BY

MARTIN DOSCHER, Agent, 96 Chambers Street, N. Y

NATIONAL Horse Nail Co.

MANUFACTURERS OF

FINISHED

[BRIGHT OR BLUED]

These nails are made of the best brands of **NORWAY IRON,** and are guaranteed to be equal to any in the market.

NATIONAL HORSE NAIL CO.,

VERGENNES, VT.

HORACE DURRIE & CO., Agents,
No. 97 Chambers St., New York

CHAS. E. LITTLE, 59 Fulton St., N. Y.

1760.  1875.

Solid Cast Steel Pump Augers

Solid Cast Steel Augers & Reamers

For Boring PUMP LOGS. All sizes in stock. **Socket Shanks, Ring Handles, and Connecting Rods** for the above to order. Also **Tenoning Tools** for joining log ends. **Coopers' and Slaters' Tools,** Tool Chests. Tools for all trades a specialty.

TACKLE BLOCKS

BURR & CO.,

Manufacturers of Waterman and Russel's

Patent Iron Strapped Blocks.

Also, Manufacturers of

IROPE STRAPPED BLOCKS.

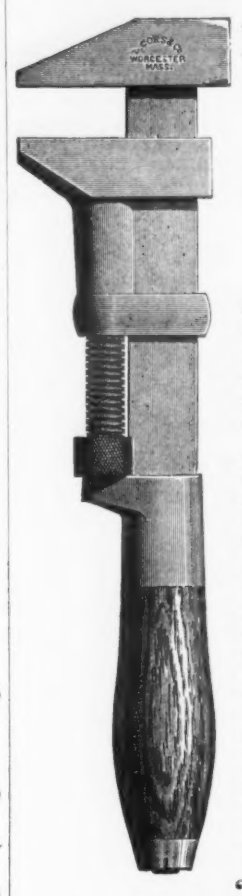
31 Peck Slip, New York.

L. COES'

Genuine Improved Patent

SCREW WRENCHES.

Manufactured by



L. COES & CO.,

Worcester, Mass.

Established  in 1838.

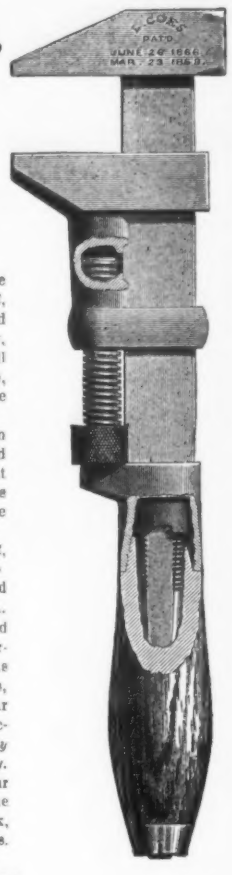
Registered March 31, 1874.

We invite the particular attention of the trade to our New Straight Bar Wrench, *widened*, full size of the larger part of the so called "reinforced or jog bar." Also our enlarged jaw, made with ribs on the inside, having a full bearing on the front of bar (see sectional view), making the jaw fully equal to *any* strain the bar may be subjected to.

These recent improvements in combination with the nut inside the ferrule firmly screwed up flush, against square, solid bearings (that cannot be forced out of place by use), verifies our claim that we are manufacturing the strongest Wrench in the market.

We would also call attention to the *fact*, that in 1869 we made several *important* improvements (secured by patents), on the old wrench previously manufactured by L. & A. G. Coes which were *at once closely* imitated and sold as the *Genuine* Wrench by certain parties who seem to rely upon *our* improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be *good* evidence that we manufacture a superior Wrench, we wish the trade *may not be deceived* on the question of *originality*. Trusting the trade will fully appreciate our *recent* efforts, both in improvements on the Wrench and in the adoption of a Trade Mark, we would caution them against imitations. None genuine unless stamped,

"L. COES & CO."



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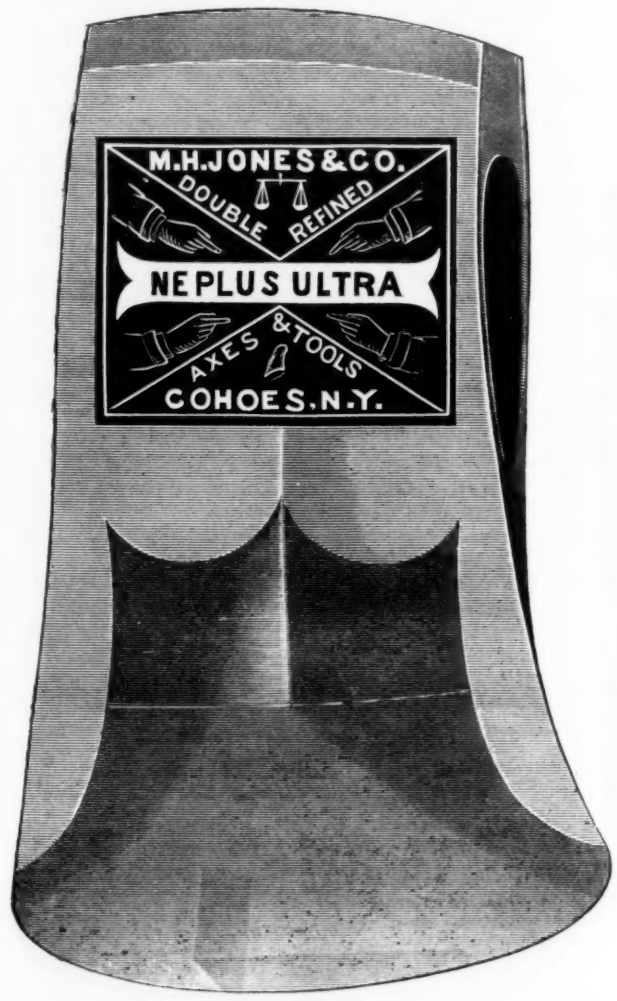
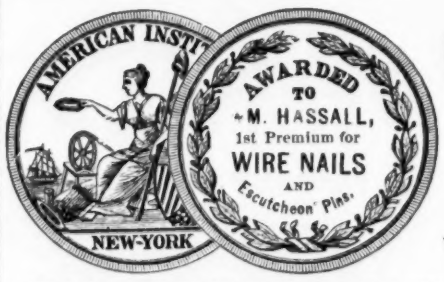
HORACE DURRIE & CO., Sole Agents.



HORACE DURRIE & CO.,

Agents, - - - - New York.

ESTABLISHED 1850.



WM. HASSALL,

Manufacturer of

American and French

Wire Nails

With Flat, Round, Oval, Depressed, Screw and Fancy Heads.

Molding and Finishing Nails, with or without heads. **Brush Makers', Upholsterers', Cigar Box, Basket, Chair and Undertakers' Finishing Nails** a specialty. **Shoe Nails of Brass and Iron. Bright Iron Rivets. Brass and Iron Escutcheon Pins,** with flat, round and fancy heads, all sizes on hand and to order.

OFFICE AND WORKS: *Nos. 63 & 65 Elizabeth Street, New York.*

CHAMPION
HOG RINGER
RINGS and HOLDER.

Only double Ring ever invented. The only Ring that will effectually keep Hogs from rooting. No sharp points in the nose.

EAGLE BILL
CORN HUSKER

Is the best Husker in the market. Farmers say it is the best. Use no other.

BROWN'S
HOG AND PIG
RINGER and RINGS

Only single Ring in the market that closes on the outside of the nose. No sharp points in the nose to keep it sore.

Ringers. 75c. Rings, 40c. 100. Holders, 75c. Huskers, 15c.

CHAMBERS BERING & QUINLAN, Exclusive Manufacturers Decatur, Ill.

Fine American Cutlery.

The New York agent of a large cutlery establishment in New England speaks of more inquiry from abroad of late than he has before known for American goods, which he attributes to recent efforts to reach foreign buyers through advertising. His remark is that "we have not yet a strong hold abroad, but there is a great deal of inquiry." In proof of this we were shown a letter from Berlin, saying: "Your house has been recommended and we want samples of goods." Another from Sidney, New South Wales, says: "Please put up a thorough and complete line of samples." Another from Adelaide, Australia, asks prices, and says that "if they compare well with Sheffield, some business can be done." The Brazil mail just received contains similar correspondence. The conclusion reached is that at several points in the foreign market there is an opening for fine American cutlery, giving promise for the future. It does not appear that our cutlery manufacturers are making much new trade, but rather that what we gain our English competitors lose.

An anomaly illustrative of the inert character of the Mongolian race, is observed among the Chinamen employed for many years past in making cutlery at Beaver Falls, Pa., where they adhere to the use of their chopsticks as stubbornly as ever, which augurs poorly for an extension of trade in this line among the Celestials. They imitate well, but have no inventive genius.

It is noticed, as the result of the recent stir among would-be exporters, that a considerable class of adventurers has come to the surface, asking for samples and a cash advance, to be shared equally among the firms accepting the offer of services, to meet expenses. One of our merchants, in directing attention to this new feature, observes that he does not favor overtures of this sort; that the policy of his firm is to move slowly, and when anything *bona fide* offers be prepared to take it. They will not spend much money to get orders, for the world, in their opinion, is not ready.

The system of labor existing among English and American manufacturers is spoken of by the New York representative of one of the large cutlery companies as radically different, and their comparative merits are being subjected to a severe test. The American mechanic works rapidly by the aid of machinery, and it is owing to improved appliances—substitutes for hand labor—that he accomplishes so much. In England, on the contrary, an entire knife is made by a single man, on a plan exactly the reverse of the American system of team work, as seen in the manufacture of shoes and in other lines. Wages in England are at present very low, in comparison with rates paid in the United States, which is a great point in their favor as against America, but with continued strikes in the manufacturing districts of England the tendency there is toward higher wages, which must go against her.

As a general remark it may be said that the best American manufacturers are giving more attention to fine work and are using American steel almost exclusively.

Failures in New York During the Past Six Months.

There were an exceptionally large number of failures in this city during the six months ending June 30, there having been in all 514 reported, in which the aggregate liabilities amounted to $39,030,795 and the assets were valued at $11,012,662. This is a large increase over the record for the corresponding period of the year 1877. Depreciation in real estate has forced many houses to suspend, and the repeal of the bankrupt law has also swelled the list of failures. Among the various branches of business stock brokers have suffered the most, there having been 23 failures in that line, their total liabilities being $3,854,260. Manufacturers have suffered severely, 23 failures being reported, in which the liabilities were $1,412,565. Twenty-six grocers failed, the liabilities being $978,495. Carpenters and builders swell the list by 14 failures, with liabilities $3,518,047. In January the drug trade was greatly depressed on account of the assignment of E. J. Dunning, Jr., and seven drug houses went under, having liabilities amounting to $1,537,153. Twenty-one failures were reported in the boot and shoe trade, with liabilities of $1,388,076. Lumber dealers felt the hard times, there being seven failures, in which the liabilities were $2,147,928. In the hat trade there were 16 failures, the liabilities amounting to $1,040,246. Nineteen liquor dealers failed owing $809,088. Fourteen hotels and restaurants suspended, their debts amounting to $311,018. The provision trade had fifteen failures, in which the liabilities were $1,427,168. Seventeen produce merchants suspended, the aggregate liabilities being $335,913. The sugar trade had three failures, the liabilities amounting to $1,150,313. In the shipping line four firms suspended, having liabilities of $846,965. Four real estate agents are bankrupt, with debts amounting to $1,567,500. Five railroad contractors failed, owing $1,340,682. In the jewelry trade fourteen failures were announced, the liabilities being $508,826. Nine furniture dealers were unable to meet their payments, and owe their creditors $66,283. The dry goods trade has passed through its worst period, and only seven failures were reported, the total liabilities being $471,504 and assets $193,079. In the fancy goods trade thirteen firms failed, having an aggregate indebtedness of $550,609.

There were 54 business failures reported in this city during the past month, with liabilities aggregating in all $4,312,030. This shows a considerable falling off both in numbers and amount, as compared with the previous month, there having been reported during May a total of 95 failures in the city, with gross liabilities amounting to $5,686,306. Among the more prominent individual and firm suspensions during June and their indebtedness, so far as could be ascertained, may be enumerated, Alden B. Stockwell, the former Pacific Mail President, $1,064,000; B. L. Solomon & Sons, furniture and upholstery, $500,000; David M. Koehler, liquors, $510,000; Chas. Scott & Co., white goods importers, $200,000; Ash Bros., clothing, $160,000; Haines & de Janin, boarding school, $143,000; Rodger, Wardrobe & Co., white goods importers, $98,000; Combination Rubber Company, $75,000, and many others.

The East River Bridge.—At the monthly meeting of the New York and Brooklyn Bridge trustees on Monday, the treasurer's monthly report showed $101,138.73 receipts and $189,063.36 expenditures. The executive committee, which had its meeting yesterday, had opened the proposals for furnishing charcoal iron wrapping wire for the cables, and they reported that bids had been received from J. Lloyd Haigh, Washburn & Moen and John A. Roebling's Sons & Co. The contract was awarded to Mr. Haigh for 3.95 cents per pound. The board went into executive session to consider the proposals for the manufacture of about 5800 tons of ironwork required for the main span and two land spans of the suspended structure of the bridge. The main span has a length of 1595 feet 6 inches from center to center of towers. Each land span has a length of 930 feet from the center of the tower to the face of the anchorage. The framework of this superstructure has a width of 86 feet, and is hung from four 16-inch steel cables by means of suspenders. In the land spans the equilibrium of curves requires the main cables to be 8 feet below grade at the face of the anchorage, thus bringing the floor line above the cables for a distance of 250 feet out from thence. The suspenders are here replaced by posts standing on the cables. The grade of both sides is fixed at 3.25 feet to a hundred. The statement was made in executive session that the treasurer was lacking money, because of the delay in the collection of taxes in Brooklyn and the inaction of the Board of Apportionment in this city, and it was decided that no action could be taken on the proposals until the money was forthcoming. The bids were referred to the president.

Rapid Transit in Brooklyn.—A secret session of the Brooklyn Rapid Transit Commissioners was held on Saturday last, at which they selected the streets through which, in their opinion, the road should run, and specified the time at which certain sections should be completed. The time for the completion of the entire road is fixed at one year and six months from the 1st of August next. The rates of fare are to be 5 and 10 cents, and the capital stock is fixed at $1,000,000, divided into 10,000 shares. The commissioners decided to abandon the saddle-bag plan represented by Col. Roy Stone and recommended by Gen. Newton and Col. Adams, the consulting engineers, and to adopt plans similar to those in use in this city. The tracks will rest upon the tops of the columns or upon transverse girders supported by the columns, and combined steel and stone columns will be used where space will permit. The road will be run from Fulton Ferry along Fulton and Washington streets, Myrtle, Lexington and Nostrand avenues.

Composite Grindstones.—Messrs. Cooper & Hoile, of 351 Adams street, Brooklyn, are carrying on the manufacture of artificial grindstones. The stones are made from several qualities of clay, emery, Vienna chalk, &c., chemically prepared. The manufacturers claim to have obtained the same qualities to be found in all the various natural stones used for grinding purposes. They also make strong claims in regard to their strength, the amount of work that can be done with them, &c., which seem to be borne out by the results of actual use. These stones are made from 2 to 36 inches in diameter, and of coarse or fine grain.

At Dundas, Ont., June 28, the roof of the main building of the Canada Screw Company's works was discovered to be on fire. A large quantity of hose was immediately procured and connected with the fire pump on the premises of the Canada Tool Works of McKechnie & Bertram. The flames were mastered before the body of the building was reached. The cause of the fire is supposed to have been a spark from the smokestack. Loss about $500, which is fully covered by insurance.

A Large Bridge Contract.—The River Iron Works at Kaighn's Point, Camden, has secured the contract for the erection of a wrought-iron truss bridge in Connecticut. The bridge will be 48 feet span and 26 spans, making a total of 1248 feet. The iron work will be manufactured at Kaighn's Point, and is to be completed by the latter part of August. The bridge will be of the truss pattern, and the material will be put into shape for the New York Bridge Company, who secured the work and engaged the River Iron Company to make up the material.

Heavy Failure in England.—LONDON, July 1.—Heavy failures are reported in the South Staffordshire iron trade. H. B. Whitehouse & Son, of Bilston, large colliery proprietors and owners of several blast furnaces, have stopped work. Their liabilities are heavy.

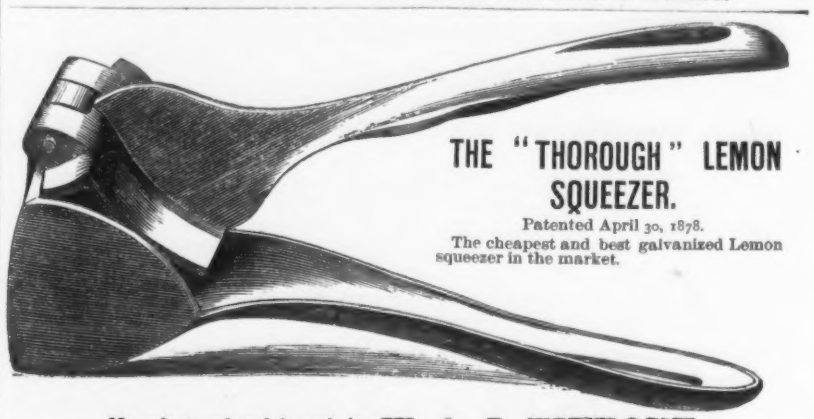
Bristol, which straddles the Tennessee and Virginia State line, has two systems of local government and belongs about equally to two States. The line between Tennessee and Virginia is the center of Main street, and it gives rise to many funny scenes; as, for example, the runaway couple need no coach and four, but, arm in arm, step across Main street and are wedded. The fugitive commits a crime in Virginia, goes to the pavement on the other side of the street and talks defiantly to the officer on the opposite side who has a warrant for his arrest. A misstep or too bold disposition will sometimes, however, bring him to grief. Several instances have occurred of a fugitive being hustled across the line by a party prepared while in the act of holding such a conversation, and they tell of a man who defiantly perched himself on a pile of store boxes within six feet of the line, jeering the officers on the other side, but, unfortunately for him, some law-abiding citizens tilted the boxes, and when he reached the ground he was in the other State.

THE BEST KITCHEN AND TOILET WARE.

It is made of Decarbonized Iron and Covered with a Perfect Enamel of Unquestionable Purity.

Its Merits have been tested and are vouched for by the Foremost Chemists and Experts in the Land.

MANUFACTURED ONLY BY THE
St. Louis Stamping Co., St. Louis, Mo.
Branch Office & Salesroom,
57 Beekman Street, New York.
PRICE LISTS, DISCOUNTS AND TESTIMONIALS FURNISHED THE TRADE.



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The cheapest and best galvanized Lemon squeezer in the market.

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8 ft.	500 lb.	$22 50	$1 00
8	1,000	25 00	1 20
8	2,000	30 00	1 50
8	3,000	40 00	1 75
9	4,000	60 00	2 00
10	6,000	75 00	2 20
10	8,000	95 00	2 40
12	12,000	150 00	3 75
12	16,000	225 00	4 75
12	20,000	300 00	6 00

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Rope and Iron Strap of all kinds. Lignumvitæ Wood for Ten-Pin Balls.
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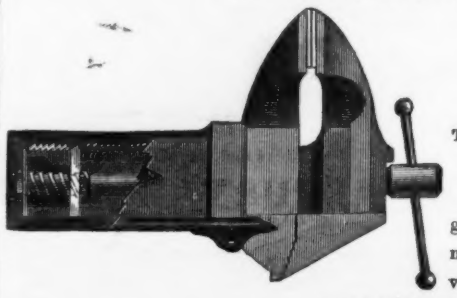
Pat. Nov. 1st, 1870; Feb. 19th, 1877.



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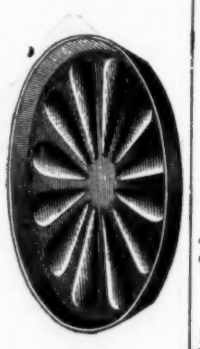
COAL HODS.
Black and Galvanized.
ALSO
PATENT
Oriental Funnel
COAL HODS.



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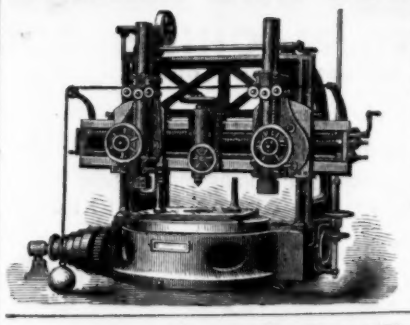

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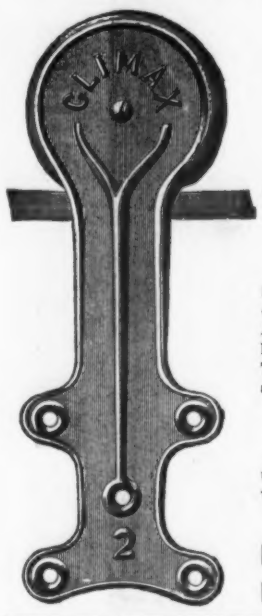

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The main wheel contains four anti-friction wheels which revolve upon axles fast in its sides. The main wheel revolves nine times while the anti-friction wheels are revolving once.

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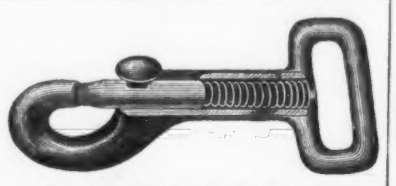

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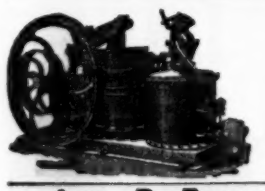

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Larger sizes per contract. Apply for illustrated price list.

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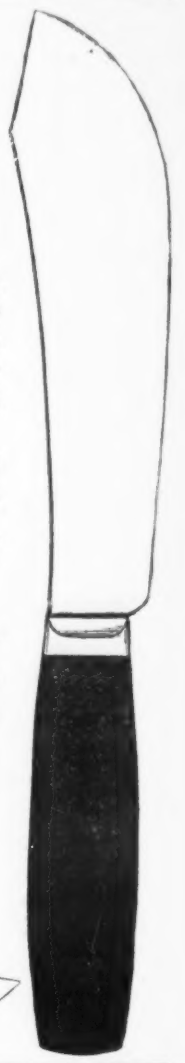

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We have doubled our variety of Table Knives within six months. Our present styles are unequaled in design, have the strongest and most desirable handle known, and are sold at unprecedentedly low prices.

Correspondence solicited.

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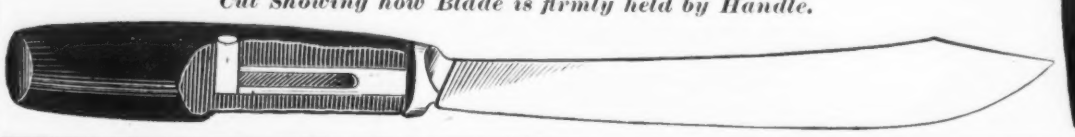
Cut Showing how Blade is firmly held by Handle.



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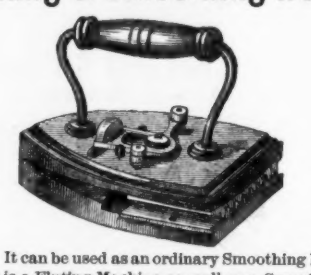
Fluting & Smoothing Iron.



1st. It can be used as an ordinary Smoothing Iron. 2d. It is a Fluting Machine as well as a Smoothing Iron. 3d. The Fluting Attachment being made of brass, and convex in form, it has all the advantages of the crank machine. 4th. It combines the two articles in one, taking up the room of but one machine, and is always ready for use.

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Vertical Engines, with or without wheels, very convenient, economical and complete in every detail, best and cheapest Vertical in the world. Fig. 1 is engine in use. Fig. 2 ready for road.

Boiler & Gearing larger than other makers.

Fig. 2.

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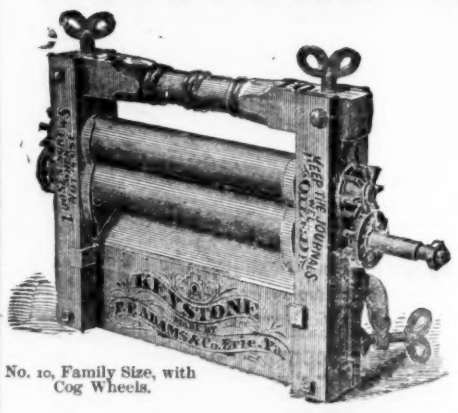

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Wood Frame Cog-Wheel Wringers.

No.	Size of Rolls.	Price per doz.
10	10X1¾	$60.00
12	10X1⅞	63.68
16	11X1¾	68.00
18	11X1⅞	71.00

Wood Frame Friction Wringers.

No.	Size of Rolls.	Price per doz.
1½	10X1⅝	$51.00
1	10X1¾	54.00
3	11X1¾	62.00

Self-Adjusting Iron Frame Friction Wringers.

No.	Size of Rolls.	Price per doz.
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Warranted greater capacity than any other wringer.

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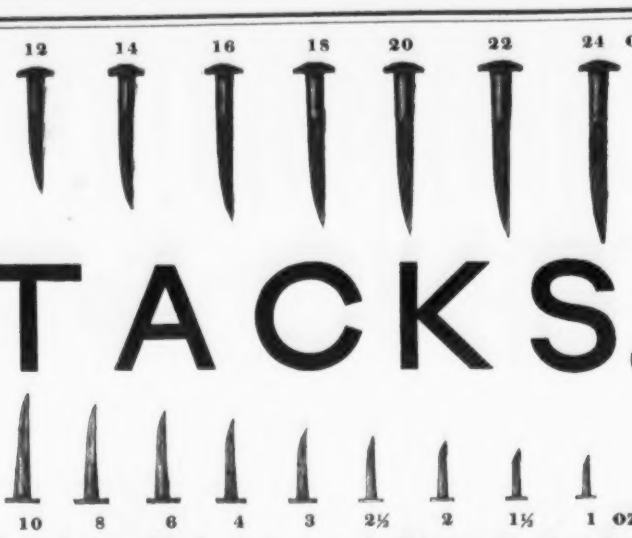
Warranted Double the Capacity of any Purchase Gear Wringer.



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TINNED, LEATHERED AND LARGE HEAD IRON CARPET TACKS.

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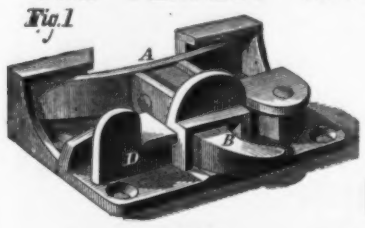

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METALLIC CLOTHES PIN,

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Will securely hold any article, from a silk handkerchief to a carpet. No article can be blown away. Does not soil the clothing. Manufactured by

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The Best Article of the kind in the Market.

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" B,	" 4 "	"	.....	4.00
" AA,	" 2 "	with inside of Cylinder Enameled	.....	4.00
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Fig.2.

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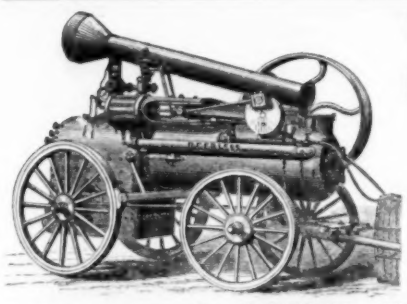

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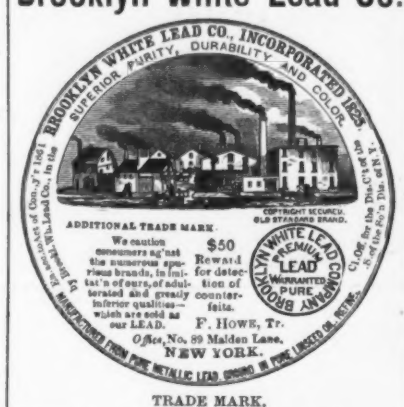

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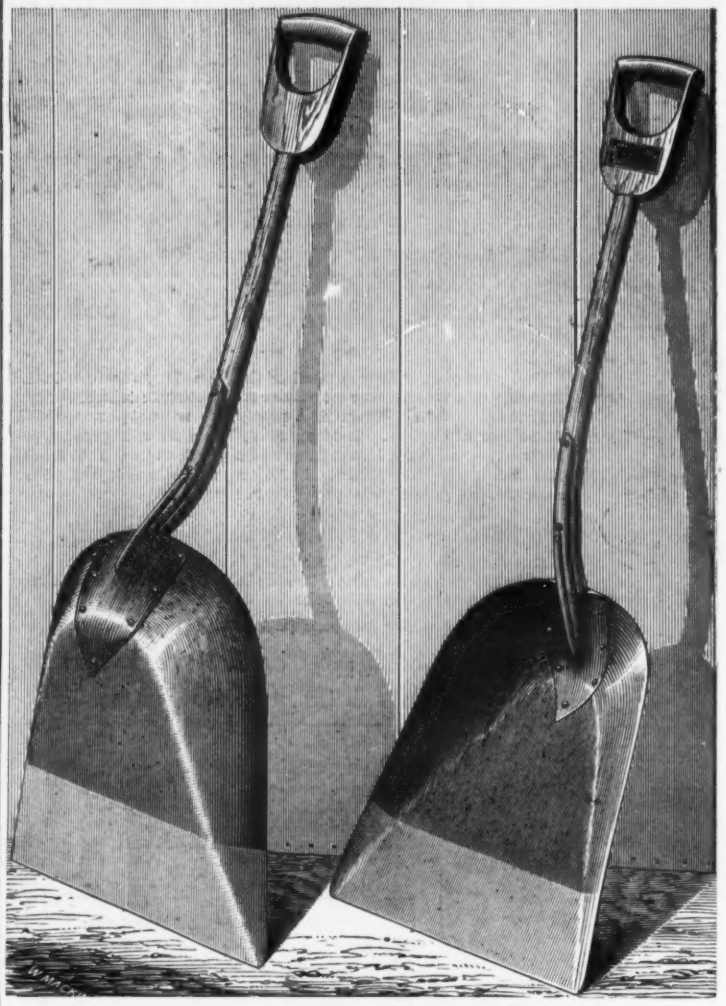

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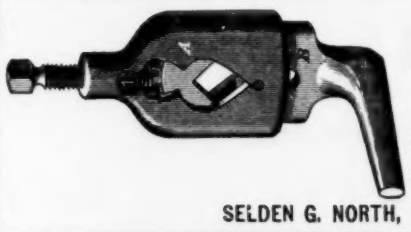
Universally acknowledged to be without an equal as a Kitchen Sink. Send for Descriptive Circular and Prices.



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Send for circular.

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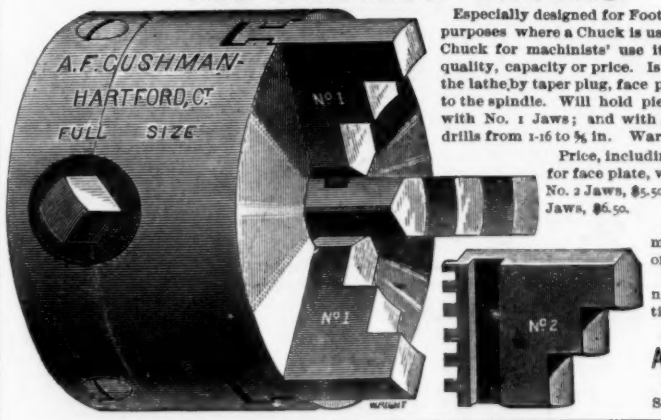

Especially designed for Foot Lathes and for all purposes where a Chuck is used; and as a Drill Chuck for machinists' use it has no superior in quality, capacity or price. Is made to attach to the lathe by taper plug, face plate, or to screw on to the spindle. Will hold pieces 2¼ in. diameter with No. 1 Jaws; and with No. 2 Jaws will hold drills from 1-16 to ⅝ in. Warranted satisfactory

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&c., &c.

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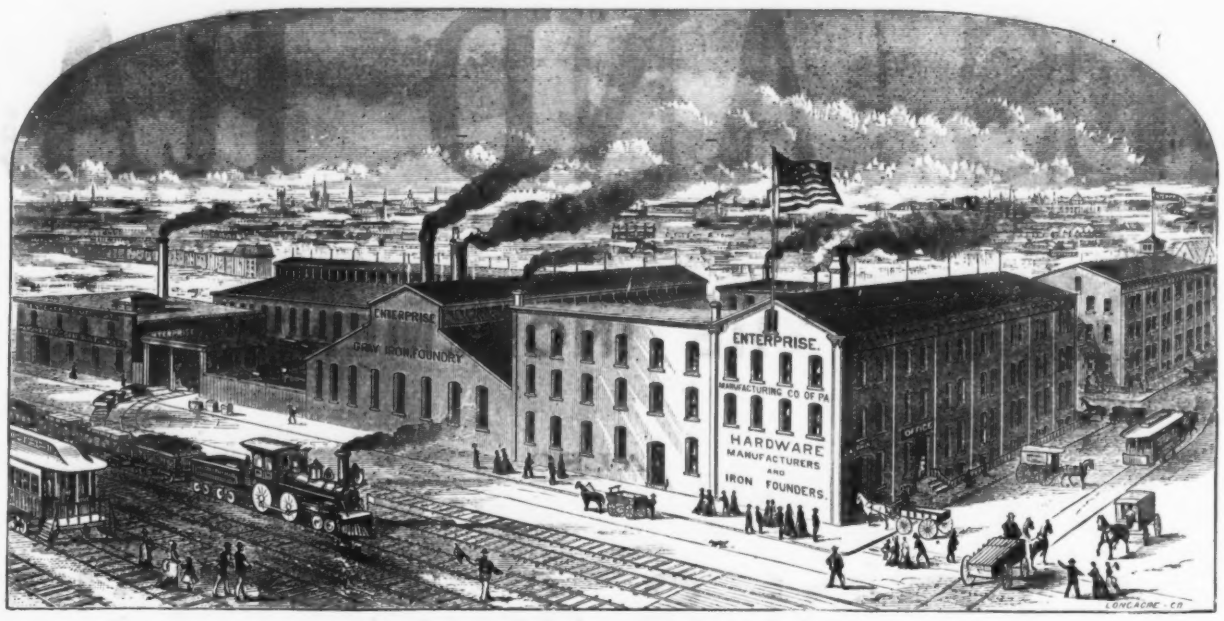

VIEW OF WORKS.

SPECIALTIES:

American Coffee, Spice and Drug Mills.

Combined Sausage Stuffer, Fruit Lard and Jelly Press.
Champion Dried Beef Shaver.
Bung Hole Borers.
Coffee Roasters, &c , &c.

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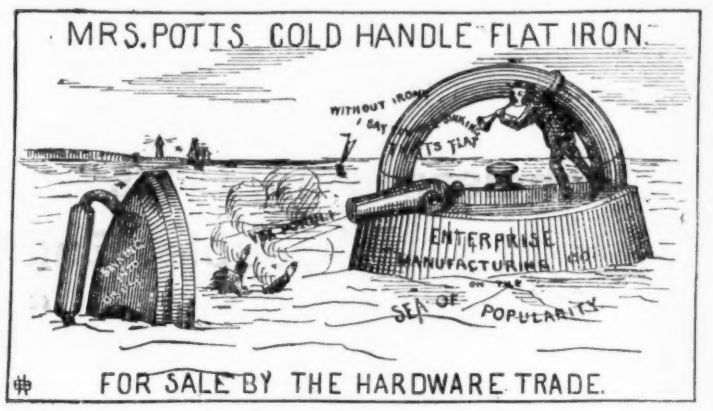
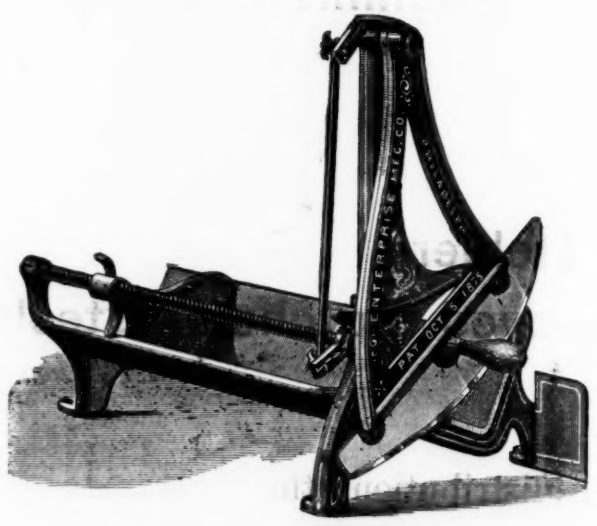
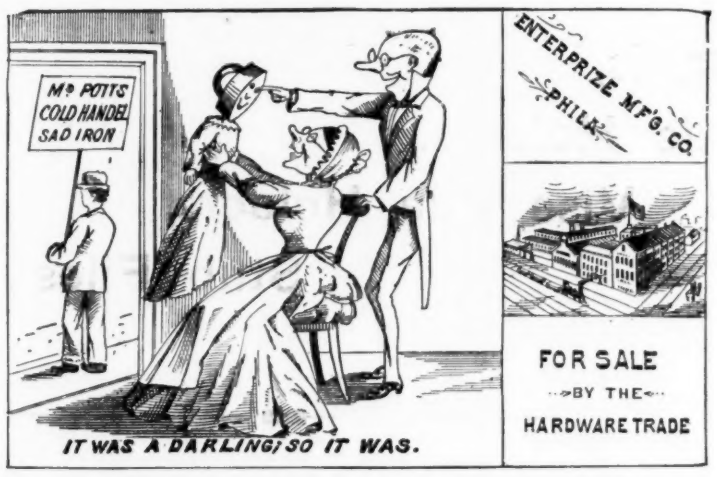
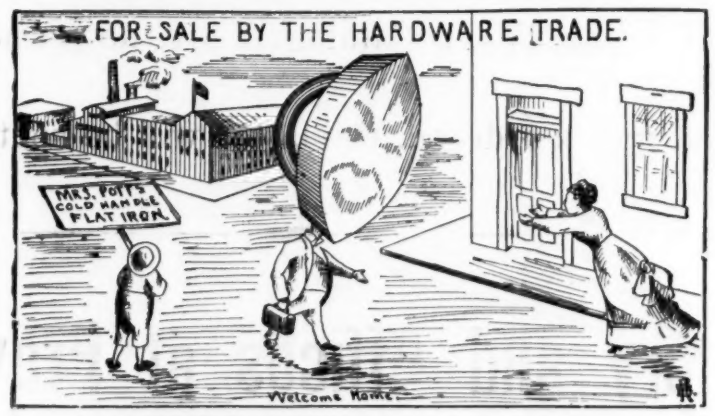


SHOWING A FULL SET OF IRONS.







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New Champion Dried Beef Shaver.

It is the Simplest.
It is the Cheapest.
It is the Best.

We guarantee it superior to all others in the market.

PRICE, - $6.00 each.

Showing Mill Closed.

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We make twenty sizes Coffee Mills, from $2.00 to $100.00

The season is near at hand for using these machines. We ask a comparison with others in the market, both as to price and quality.

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Sole Manufacturers of

FILES AND RASPS

HAVING THE INCREMENT CUT.

ALSO

FILERS' TOOLS & SPECIALTIES.

'Nicholson File Co.'s" Files and Rasps,
"Double Ender" Saw Files,
"Slim" Saw Files,
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Handled Rifflers,
Machinists' Scrapers,
File Brushes, File Cards,
Surface File Holders,
Vise File Holders,
Stub Files and Holders,
Improved Butchers' Steels.

Both our Treatise and our First or No. 1 Catalogue are now ready for distribution; the former to our customers, free of charge, with first goods ordered, the latter will be sent upon application to anyone interested.

Manufactory and Offices at Providence, R. I.

Executive Officers,

W. T. NICHOLSON, Pres't. **GEO. NICHOLSON, Treas.**

Incorporated 1864. **Capital Stock, $400,000.**

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Elbers Alexander D., 26½ Broadway, N. Y. 5
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Eberhard Geo. F. & Co., Canton, O. 32
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Dietz R. E., 54 and 56 Fulton, N. Y. 46
Oliver E., 106 and 108 Beekman N. Y. 13
Ripley Mfg. Co., Unionville, Conn. 12
Nails.
Schoenberger & Co., Pittsburgh, Pa. 4
Zug & Co., Pittsburgh, Pa. 4
Nail Machinery.
Coyne & Hatry, Pittsburgh, Pa. 4
Nickel Platers.
Hartman John, 37½ N. Seventh, Philadelphia 43
Jackson Geo. W., 21 E. 13th, N. Y. 43
Nickel Platers' Supplies.
Colt A. T., 47 Beekman, N. Y. 43
Condit, Hanson & Van Winkle, Newark, N. J. 43
Zucker & Levett, 639 and 641 W. 51st, N. Y. 31
Night Latches.
Many Francis, 143 Chambers, N. Y. 8
Norway Shapes, *Rollers of.*
Rowland Wm. & Harvey, Frankford, Philadelphia. 46
Note Broker.
Gallaudet P. W., 3 and 5 Wall, N. Y. 4
Nut Tapping Machines.
Howard Iron Works, Buffalo, N. Y. 44
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Haskell W. H. & Co., Pawtucket, R. I. 40
Lewis, Oliver & Phillips, Pittsburgh, Pa. 13
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Shelton Co., Birmingham, Conn. 46
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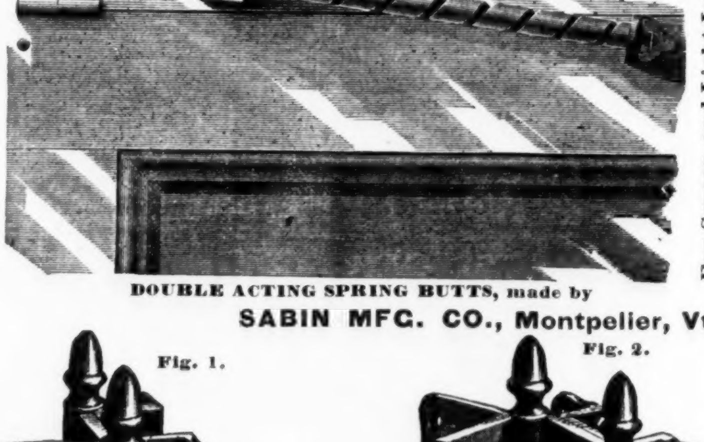

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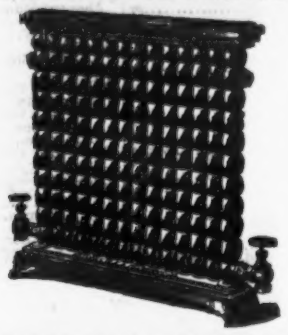

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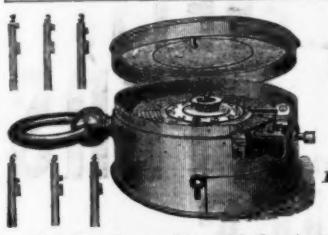

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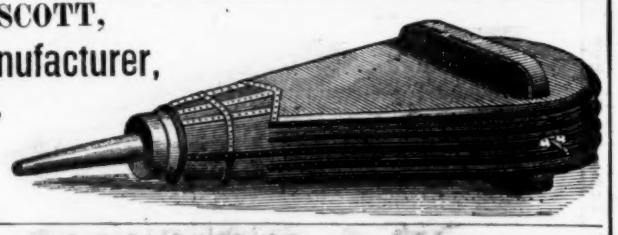

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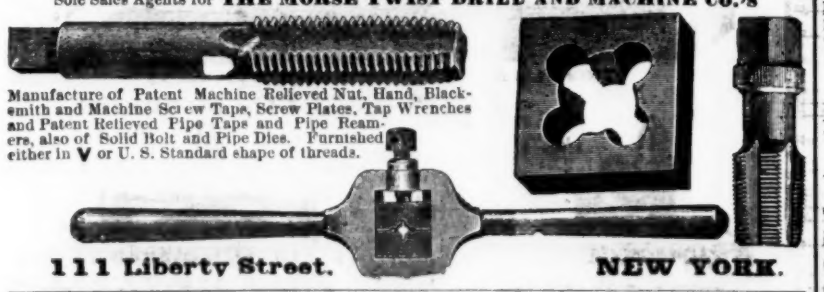

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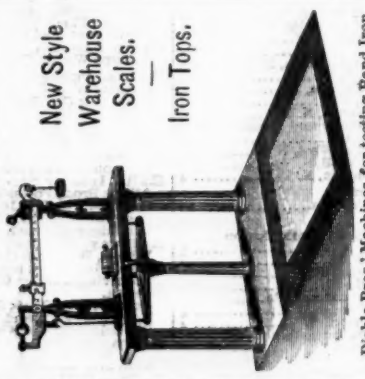

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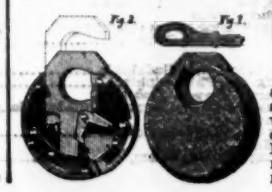

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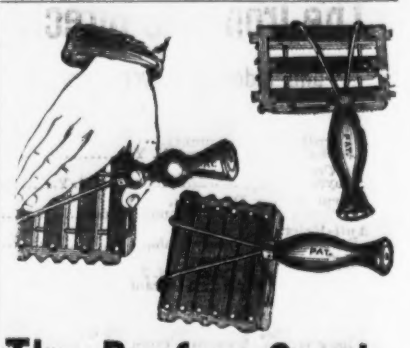
712 Cherry St., Philadelphia.

Greatly improved. Prices reduced. As now made it is the best and most economical Pad Lock for all uses extant. Appreciated by all who use them. For simplicity, compactness, durability, convenience and security it has no equal. Springs now made from the celebrated Phosphor Bronze. We make these Locks with Master Keys when so ordered. Largely used by the U. S. Government, Railroads, Corporations, etc., etc. Samples of 2¼ in. size sent per mail on receipt of one dollar.



The Perfect Comb.

We call your attention specially to our new patent endless wire frame comb. The result of a long series of experiments, made with a view to meeting all the requirements of a *Perfect Comb.* It is better, stronger, and more durable than any ever before invented. The raised wire shank gives what has never before been attained, viz: a rest and brace for the thumb, in such a position that the hand cannot come in contact with the horse while using the comb. The wire braces which run from the shank over the back to the front teeth give strength and durability in a direction never heretofore attained, and at the same time serve as an extra handle; and when clasped by the fingers in connection with the raised shank the comb is more firmly, easily, and completely held, and with much less fatigue to the hand than is possible in any other formation—in short, it needs but a trial to vindicate its name: **The Perfect Comb.**

THE LAWRENCE COMB CO.

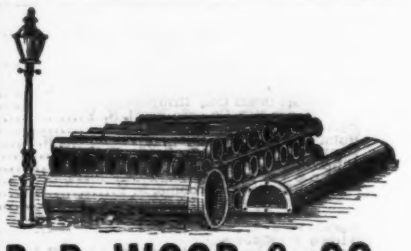
Factory and Office,
382 2d Ave., cor. 22d St., N. Y.

WM. S. CARR & CO.

Sole Manufacturers of

CARR'S PATENT Water Closets,

PUMPS, CABINET WOOD WORK, &c.
106, 108 & 110 Centre Street,
Factory, Mott Haven, - - - NEW YORK.



R. D. WOOD & CO.,

Philadelphia,

Manufacturers of

Cast Iron Pipe

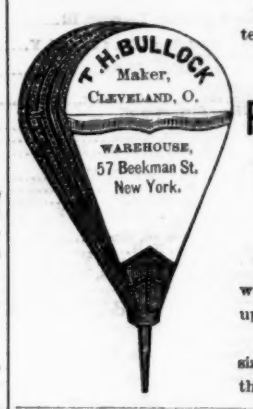
FOR WATER AND GAS.

Lamp Posts, Valves, &c.,
Mathew's Pat. Anti-Freezing Hydrants.
400 CHESTNUT STREET.

NEWCOMB BROS.,

Manufacturers of

586 Water St., N. Y.
TENNIS & WILSON, Agents,
81 Beekman Street, N. Y.



I invite special attentian to my

PATENT

Reversible Nozzle.

These Bellows are well adapted and put up for export trade.

I manufacture all sizes, with or without this improvement.

NEW YORK and BOSTON

Pattern

STORE TRUCKS.

Railroad, Warehouse, Platform and Block Trucks, all sizes.

Manufactured only by

H. N. HUBBARD,

323 East 22d St., New York.

Reduced prices. Catalogues furnished.

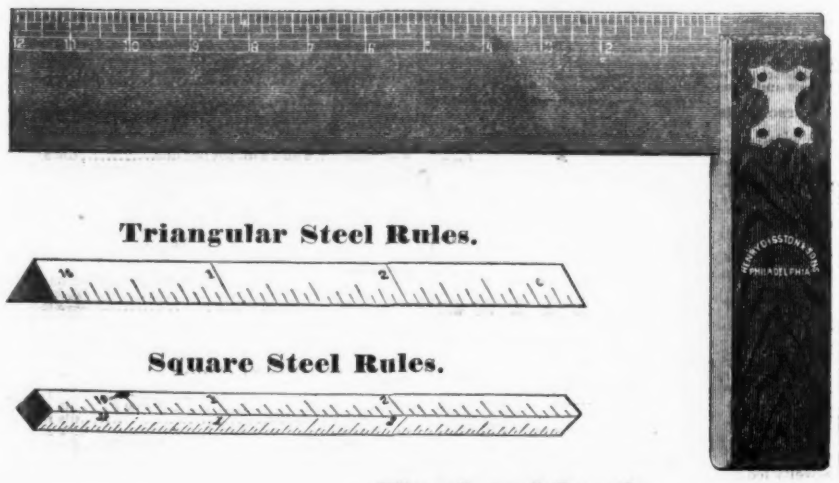
HENRY DISSTON & SONS

Keystone Saw, Tool, Steel & File Works.

FRONT AND LAUREL STREETS, PHILADELPHIA.

Branch Works, Tacony, Philadelphia. **Branch House, Randolph & Market Streets, Chicago. Ill.**

Try Square.

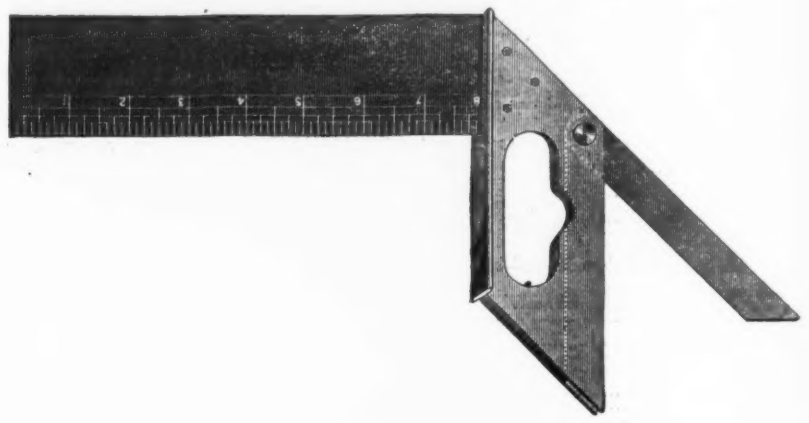


Triangular Steel Rules.

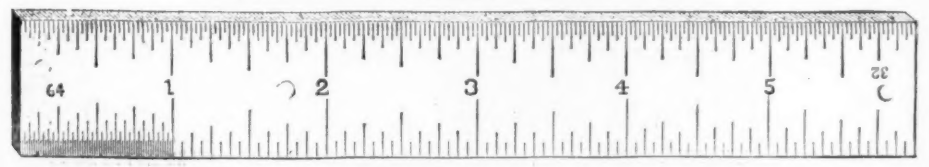
Square Steel Rules.

Gauges.

Improved Iron Frame Mitre and Square.

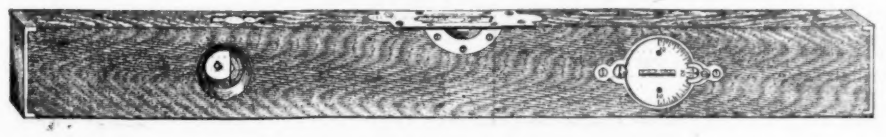


Machinists' Standard Steel Rules.



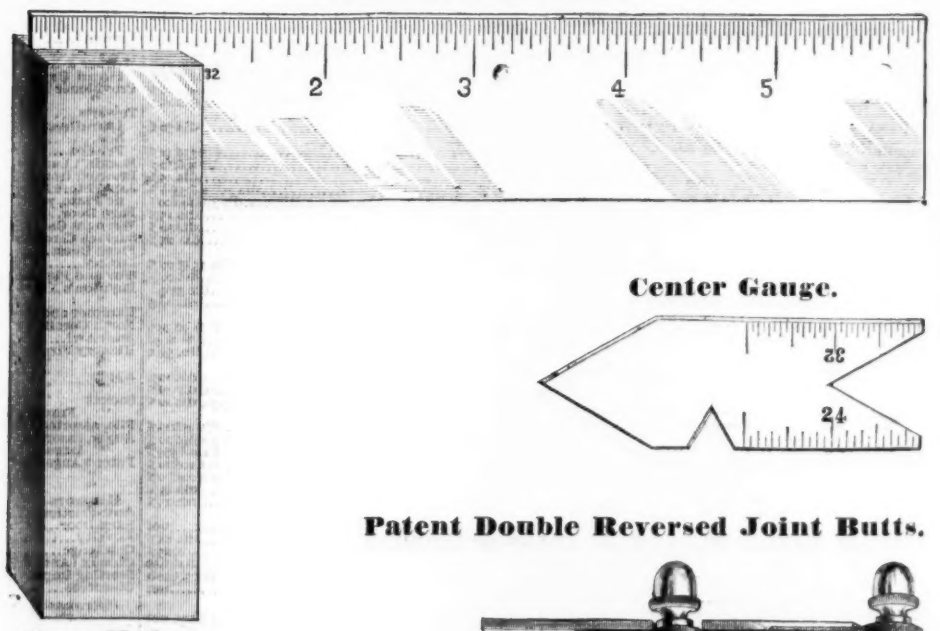
Plumb and Levels.

Graduating Level.



Machinists' Levels.

Graduated Steel Squares for Machinists' Use, Graduated to 1-32 of an inch.



Bevels.

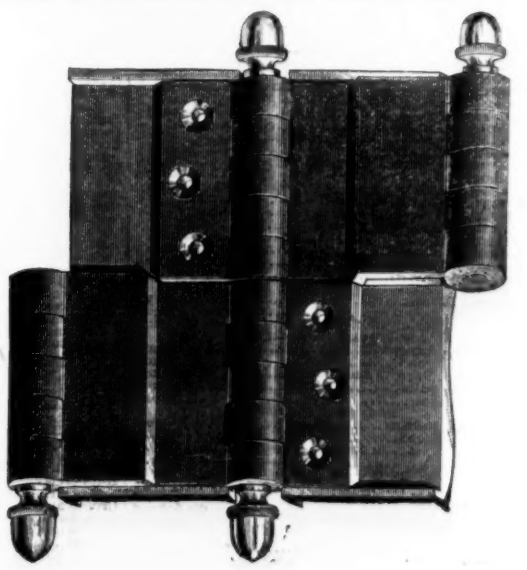
Revolving Shield Screw-Drivers.

Center Gauge.

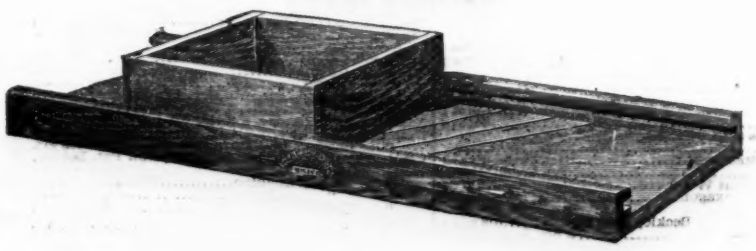
The Excelsior Wrench and Screw-Driver.

Corn Knives.

Patent Double Reversed Joint Butts.



Crout Cutters.



New York Wholesale Prices, July 3, 1878.

HARDWARE.

Anvils.
American....₱ ℔ 11c—dis 20%
Wright's....₱ ℔ gold 10½c over 250 ℔s 10¾c, gold
Armitage's Mouse Hole....gold 9¾ @ 10c
Wilkinson's....₱ ℔ gold 11c
Eagle Anvils (American)....₱ ℔ 9c dis 20%

Apple Parers, &c.
Turn Table....₱ doz $6.75, dis 10%
Lightning....₱ doz 6.75, dis 10%
Bay State....₱ doz 13.00, dis 10%
Reading, '72....₱ doz $6.00, dis 10&2%
" '74....₱ doz 7.00, dis 10&2%
" '75....₱ doz 8.00, dis 10&2%
" '78....₱ doz 8.75, dis 10&2%
Climax Corer and Slicer....₱ doz 6.75, dis 10%

Augers and Bits.
Conn. Valley Mfg. Co.; Douglass Mf. Co.; Ives; Beecher (French, Swift & Co); Griswold; Nobles Mfg. Co; Kasson's Patent....dis 50 @ %
Cook's, Douglass Mfg. Co....dis 50&5%
Cook's, Ives'....dis 45&10%
Snell Mfg. Co....dis 30&10%
Jennings' Bits....dis 10&10%
Imitation Jenning's Bits....dis 30%
Ives' "Jennings" Bits....dis 25%
Lewis' Single Twist Bits....dis 40%
Andrews Bits....dis 50%
Griswold's Patent Bits....dis 30%
Expansive Bits, Clark's, small, $18; large, $26..dis 20%
" " Ives....$20 @ $30—dis 33⅓%
" " Blake's....$20—dis 40%
" " Parmelee's....small, $20; large, $36....dis 25%
Hollow Augers Ives'; French Swift & Co....dis 40%
" " Bonney's Adjust., ₱ doz $48—dis 25&10%
" " Stearns' Adjust., ₱ doz $48—dis 25&10%
" " Ives' Expansive ...each $4.50—dis 40%
" " Univ'sal Expansive, each $4.50—dis 20%
Gimlet Bits....$7.50 ₱ gross, dis 40%
" Diamond....₱ doz $1.00 dis 25%
" "Bee"....dis 25&10%
Double Cut Gimlet Bits Shepardson's....dis 40%
" " Ct. Valley Mfg. Co...dis 30&10%
" " Hartwell's....dis 50&10%
" " Douglass'....dis 40%
" " Ives'....dis 40&10%
Morse's Bit Stock Drill, List of May 15, '78....dis 25%
L'Hommedieu's Ship Augers....dis 15%
Watrous Ship Augers....dis 15%

Awl Hafts.
Sewing, Brass Ferrule....$3.50 ₱ gross—dis 35&10%
Peg, "....3.50 " dis 35&10%
Patent Sewing, Short....$1.00 ₱ doz—dis 35&10
" " Long....$1.40 ₱ doz—dis 10%
" Peg, Plain Top....$10.00 ₱ gross—dis 35&10%
" " Leather Top....12.00 " dis 35&10%

Awls, Brad Sets, &c.
Awls Sewing, Common....₱ gross $1.35—dis 25%
" Sewing, Best....₱ gross 1.40—dis 10%
" Shouldered Peg....₱ gross 2.25—dis 15%
" Patent Peg....₱ gross .60—dis 15%
" Shouldered Brad....₱ gross $2.70—dis 25&10%
" Handled Brad....$8.00 ₱ gross—dis 35&10%
" Handled Scratch....$7.50 ₱ gross—dis 25&10%
" Socket Scratch....$1.00@$1.25 ₱ doz—net
Brad Sets, Aiken's....₱ doz $12.00—dis 40&10%
No. 42, $10.50; No. 43, $12.50....dis 60%
Stanley's Excelsior No. 1, $11.00—dis 25&10%

Axles.
Common (Guy C. Hotchkiss, Field & Co.)....₱ ℔ 4¼c
Solid Collar, Case Hardened, Chilled Box....₱ ℔ 8c
Axle Grease.—Frazer's....₱ ℔ 6c

Balances.
Light or "Common"....dis 25&10%
All other Spring Balances....dis 25%
Bed Keys.—Gray's Ratchet....₱ doz $4.00, dis 15%

Bells.
Hand, Light Brass....dis. 75%
" Extra Heavy....dis 40&5&10%
" White Metal....dis 60&5&10%
" Silver Chime....dis 20&10%
" Swiss....dis 25%
" Globe (Cone's Patent)....dis 25&10%
Gong, Abbe's....dis 20&10%
" Yankee....dis 35&10%
" Barton's....dis 40&2%
Crank, Taylor's....dis 25&10%
" Brook's....dis 50%
" Cone's....dis 10%
" Connell's....dis 50&10%
Lever, Sargent's....dis 65&10%
" Taylor's Bronze or Plated Lever....net
" " Japanned Lever....dis 25%
" Hart, Bliven & Mead Mfg. Co....dis 50&10&2%
Pull, " " " "....dis 50&10&2%
" Brook's....dis 50%
" Western....dis 25&10%
Call....dis 20%
Cow, Common Wrought....dis 20&10%
" Western....dis 20&10%
" " Sargent's....dis 60&10%
" Kentucky "Star"....dis 20&10%
" " Sargent's....dis 60&10%
" Dodge's Genuine Kentucky, new list—

Nos.	0	1	1½	2	3	4	5	6	Hog	
	$12.00	10.00	9.00	8.00	6.00	5.00	3.50	2.50	5.00	dis 50%

" Yaw's Genuine....dis 50%
" Texas....dis 40&10%

Bellows.
Blacksmiths', Common....dis 40%
" Extra and Pittsburgh Pattern....dis 20%
Moulders'....dis 25%
Hand Bellows....dis 20%
Blind Adjusters.—Domestic....₱ doz $3.00, dis 20%
Blind Fasteners.—Mackrell's....dis 30%
Van Sand's....No. 2000, $14.00, dis 25&10%
" old pattern....₱ gross, $10.50, dis 5@10%
Washburn's Patent....₱ gross $14.00, dis 30%
Merriman's....new list net

Blind Staples.
Boardman's Patent, ⅜ in. and larger....₱ ℔ 25c
" ¼ in....₱ ℔ 30c
Harvey's Patent....⅜ & ¾ in. ₱ ℔ 28c., dis 10%
" ⅜ in....₱ ℔ 34c., dis 10%
Blocks.—Burr & Co....dis 25%
Differential Pulley Blocks....dis 20%
Tackle, Rope and Iron Strapped (The Penfield B. W.)....dis 40%
Stanley Rule and Level Co....dis 33⅓&10%

Blowers.
Keystone Portable Forge Co....dis 20%

Bolts.
Cast Iron Barrel, Shutter, &c....dis 65&10%
Cast Iron Chain (Sargent's list)....dis 65&10%
Bush's Lever Bolts....dis 40, 10&10%
Spring Butts (Humason & Beckley Mfg. Co.) dis 40&10%
Wrought Iron Barrel....dis 50, 10&10%
" " Square....dis 50, 10&10%
" " Shutter (Stanley's list)....dis 50%
" " " (Sargent's new list).dis 50, 10&10%
" " Sunk Flush, Sargent's....dis 50&10&10%
" " " " Stanley's....dis 15&10%
" " B.K.Flush, Comm'n, Stanley's.dis 30&10%
" " " " Ex. Heavy....dis 20&10%
" " Plated Knob & Slide Flush "....dis 10&10%
Carriage and Tire, Common....dis 75&3% cash
" " Norway Iron....dis 70%
" " R. B. & W....(old list) dis 70&5% cash
" " Philadelphia....dis 70%
" " Coleman....dis 60&10 @ 60&20%
" " Shelton's....(old list) dis 70&5%
Tire, Am. Screw Co....dis 70&7½%
" "Bay State"....dis 75&15%
Star (Phila)....dis 60&10@60&20%
Union Nut Company....dis 70%
Stove—American Screw Co.'s....dis 60%
" R. B. & W....dis 50&10&5%
" Union Nut Co....dis 50%
Plow....dis 50%
Machine....dis 65&10%
Bolt Ends....dis 60
Bolt and Rivet Clippers—Chambers....dis 25%
Borax....12c ₱ ℔ net

Boring Machines.

		Upright.	Angular.	
First quality, no Augers		$5.50	$7.50	dis 40&10%
" with Augers		9.00	11.00	dis 40&10%
Second quality no Augers		2.35	3.00	net
" with Augers		4.00	4.65	net
Snell's, no Augers	4.75		6.25	dis 25%
Phillips' with Augers			10.00	dis 25%

Bow Pins.
Union Nut Co....dis 60&10%
Hotchkiss'....low list dis 10%
Humason, Beckley & Co.'s....dis 60%
Sargent & Co.'s....$19.70 and $21.40, dis 60&10%
Braces.—Barber's Patent....dis 40&5%
O. S. Backus....dis 50&10%
Wilson Mfg. Co....dis 10%
Spofford's Patent....dis 50&10%
Noble's Patent....dis 40&5%
Ives' "Centennial"....dis 50%
Common Ball (American)....dis 25&10%
Brackets.—Shelf (Sargent's)..dis 60&10 @ 60&10&10%
Swing (T. & S. Mfg. Co.)....dis 33⅓%
Bright Wire Goods....dis 75&10%
Bull Rings.—Union Nut Co....dis 50&20%
Sargent's....dis 66⅔&10%
Hotchkiss'....low list dis 10%
Humason, Beckley & Co.'s....dis 60%
Union Nut Co....dis 60&10%

Butts.
Wrought Brass....dis 75%
Cast Brass, Tiebout's....dis 40%
" Corbin's....dis 50&10%

COMMON CAST, NOT DRILLED.
Fast Joint, Narrow....dis 60&10%
" Broad....dis 65&10%
Loose Joint, Narrow and Broad....dis 70&10%
Parliament Butts....dis 65&10%
Mayer's Hinges....dis 70&10%

DRILLED AND WIRED.
Fast Joint, Narrow....dis 50&10%
" Broad....dis 55&10%
" Broad, Japanned....dis 35&10%
Loose Joint....dis
" Japanned....dis
" with Acorns....dis
Parliament Butts....dis 60&10%
Mayer's Hinges....dis 65&10%
Loose Pin, no Acorn....dis
" Acorns....dis
" " Japanned....dis
" " Plated Tips....dis 65&10%
Union Mfg. Co.'s Fancy Butts—
Figured Enameled Loose Joint....dis 65&10%
Boston Finish, Plain....dis 80&10%
" " with Iron Acorns....dis 75&10%
" " with Silvered Acorns....dis 65&10%

WROUGHT IRON.
Fast Joint Narrow....dis 40&10%
" Lt. Narrow....dis 35&10%
" Broad....dis 40&10%
Loose Joint, Broad....dis 40&10%
Table Butts, Back Flaps &c....dis 35&10%
Inside Blind, Regular....dis 35&10%
" Light....dis 40&10%
Loose Pin, Wrt....dis 50&10%
Spring Hinges:
American Spiral Spring Butt Co., Jap'd....dis 25%
" " " " Fancy....dis 10%
Sabin Mfg. Co.'s Double Acting....dis 35%
Centennial, Japanned....dis 25%
" Ornamental....dis 20%
Union Spring Hinge Co.'s....dis 25%
American Spring Hinge Co.'s....dis 25%
Union Mfg. Co....dis 25%
Scovill Brass....dis 33⅓&10%
Blind Butts, Parker....dis 70%
" Palmer....dis 40&5&10%
" Seymour....dis 65&10&10%
" Shepard....dis 70%
" Lull & Porter....dis 66⅔&10%
" Nicholson....dis 45&10%
" Huffer....dis 40&10%
" Clark's, Nos. 1, 3, 5, 40 and 50....dis 70&10%
" Sargent's....dis 70&5&10%

Butchers' Cleavers.
Humason & Beckley Mfg. Co....dis 20%
D. R. Barton Tool Co....dis 20%
Bradley's....dis 25%
Beatty's....dis 25%

1	2	3	4	5	6	7	8
$16.50	19.00	21.50	24.00	27.00	30.00	33.50	36.50

Hart Mfg. Co....dis 50&10%

0	1	2	3	4	5	6
$20.00	26.00	29.50	33.00	37.00	41.50	45.00

Can Openers.
Messenger's Comet....₱ doz $3.00, dis 20%
American....₱ doz $2.25, dis 60%
Lyman's....₱ doz $3.75, dis 20%
Poole....₱ doz $3.75, dis 40%
No. 4, French....₱ doz $2.25, dis 50%
No. 5, Iron Handle....₱ doz $2.25, dis 60%
Eureka....₱ doz $2.50, dis 10%
Sardine Scissors....₱ doz $7.00, dis 45%
Star....₱ doz $5.00, dis 25%

Caps—Percussion, ₱ 1000.
Hicks & Goldmark's G. D. & S. R....35c
" " E. B. 1-10 Ground....70c, dis 6%
" " E. B. 1-10 Turned....65c, dis 5%
" " D. W. P. 1-10....$1.40, dis 5%
" " D. W. P. ¼....1.35, dis 5%
" " Colt's 1-10....70c, dis 5%
Ely's E. B....1-108, 65 @ 68c, gold
" Double Waterproof, 1-48, $1.50; 1-108, $1.58c, gold
Colt's....1-108, 80c gold
Cartridges.—Metallic....dis 60&7%
Cards.—Horse and Curry....dis 33⅓&10%
Cotton....dis 20&10%
Wool....dis 20&10%

Carpet Stretchers.
Cast Steel, Polished....₱ doz $5.00, dis 30%
" Iron, Steel Points....₱ doz $2.00, dis 45&5%

Casters.
Bed....dis 55%
Plate and Shallow Socket....dis 55%
Deep Socket....dis 40%

Cattle Leaders.
Hotchkiss' Sons'....dis 10&10%
Humason, Beckley & Co.'s....dis 60%
Sargent's....dis 60&10&10%
Union Nut Co....dis 60&10%

Chain.
Trace, 6½-1-2....by the cask, ₱ pair 45 @ 46c
" 6½-10-3....by the cask, ₱ pair 43 @ 44c
" 7-10-2....by the cask, ₱ pair 49 @ 50c
German Halter Chain....dis 30&5% gold
" Coil....dis 30&5% gold
Galvanized Pump Chain....₱ ℔ 10½c dis 10%
Jack Chain, Iron....dis 60&5%
" Brass....dis 50&5%

Chalk.
White....₱ gross 55c net
Red....₱ gross 75c net
Blue....₱ gross 90c net
White Crayons....₱ gross 13½c net

Cherry Stoners.
"Family"....₱ doz $6.75 dis 10%

Chisels.
D. R. Barton Tool Co. (all kinds)....dis 20%
Socket Framing, Crossman....dis 65&10%
" Buck Bros....new list, dis 25%
" Hart Mfg. Co....dis 65&5&10&2%
" Merrill....dis 60&10%
" Witherby Tool Co....dis 60&10%
" Douglass'....dis 70%
" Firmers, Crossman....dis 65&5%
" Buck Bros....new list, dis 25%
" Hart Mfg. Co., extra..dis 65&5&10&2%
" Merrill....dis 60&10%
" Witherby Tool Co....dis 60&10%
" Douglass'....dis 70&5%
" Corner....dis 65@70%
Tanged Firmers extra....dis 40%
" Butcher's....$5.00 @ $5.25 to £ gold
" Newbould's....5.50 to £ gold
" Spear & Jackson's....5.00 to £ gold
" Buck Bros (Shank)....5.00 to £ gold

Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron....dis 25%
" Adjustable, Gray's....dis 20%
" Lambert's....dis 20%
" Snow's....dis 40&5%
" Hammer's....dis 15%
" Stearns'....dis 15&10%
" Cabinet, Sargent's....dis 60&10&10%
" Carriage Makers', Sargent's....dis 60&10&10%
" Cord and Tape (T. & S. Mfg. Co.)....dis 30%

Clips, Axle.
Norway or Best....dis 60%
Superior....dis 60&10%
Cockeyes....1¼ in., 26c.; 1½ inch, 33c.; 1¾ in., 37c, net

Cocks, Brass.
Racking, L. F. & C. list....dis
" Peck Bros. list....dis
Globe....dis
Plain Bibbs....dis
Ale and Beer, L. F. & C. list....dis
" Peck Bros. list....dis

Coffee Mill
Board and Box....dis 20@25%
Increase Wilson's....net
Selsor's Pat....$9.50, $10.50, dis 25%
American (Enterprise Mfg. Co.)....dis 20%
French Steel....dis 20%
The Swift (Lane Bros.)....dis 25%

Combined Dinner Pail and Lantern.
Per doz $15.00....dis 30%

Compasses, Dividers, &c.
Compasses....dis 35&10%
Callipers....dis 30&10%
Dividers....dis 55%
Bemis & Call Co.'s Dividers....dis 35&10&33⅓%
Bemis & Call Co.'s Compasses & Callipers.dis 35&10&10%
Cook's....dis 15%
Excelsior....dis 50%
Miller's Patent....dis 25%

Coopers' Tools.
Bradley's....dis 15 @ 20%
D. R. Barton Tool Co....dis 20%
Corkscrews.—Humason & B....dis 33⅓%
Corn Knives and Cutters.—Bradley's....dis 10%

Crow Bars.
Cast Steel....₱ ℔ 9c net
Iron, Steel Points....₱ ℔ 5c
Crucibles.—Gautier & Co....₱ No. 5¼c

Curling Irons, &c.
⅛, ⅝, ¾ in., $1.80, 2.00, 2.40....dis 10%
Curling Tongs....₱ doz $4.25, dis 10%
Pinching Irons....₱ doz 7.50, dis 20%

Curry Combs.
Curry Comb Mfg. Co....dis 25&10%
Fitch's (List of No. 240, $1)....dis 33⅓&10%
Hotchkiss' & Kellogg's, Iron & Brass, old list.dis 40&7½%
Hotchkiss' Novelty....dis 20&10%
Rubber....₱ doz $9.00, dis 20&10%
Curtain Pins.—Silvered Glass....dis 15%
White Enamel....dis 15%

Cutlery.
Meriden Cutlery Co. (Table)....net
Am. Miller Bro.'s Cutlery Co....dis 25%
Humason & Beckley, Pocket....dis 25%
Naugatuck Cutlery Co....list net
New York Knife Co. (Pocket)....dis 35&5% cash
" " (Table)....net

Dippers.
Britannia....₱ doz $3.75 @ $4.25, net
Cocoa, Plain....₱ doz $3.25, dis 20%
" Rimmed....₱ doz 3.75, dis 20%

Dog Collars.
Embossed Gilt....dis 20%
Leather....dis 30%
Brass....dis 25%

Door Springs.
Torrey's Rod....₱ doz $2.00 net
Gray's "....₱ doz $1.65, net
Johnson's Rod....₱ doz 3.00, net
Gem (Coil)—
No. 1, Large, Japanned....₱ doz $3.50 }
No. 2, Medium, "....₱ doz 2.50 } dis 10%
No. 3, Small, "....₱ doz 2.00 }

Challenge (Coil)—		Nos. 9	7	6	
Japanned	₱ doz	$2.00	2.50	3.00	dis 15%
Coppered	₱ doz	4.00	4.50	5.00	
Galvanized	₱ doz	3.50	4.00	4.50	
Nickeled	₱ doz	5.50	6.00	7.00	

Premium (Coil)—		Nos. 1	2	3	
Japanned	₱ doz	$7.50	6.25	5.00	dis 30%
Nickeled	₱ doz	11.00	9.50	8.00	

Star (Coil)—For Cop'd, Nickel-Plated, &c., see list.
No. 4, ("Shoo Fly") Screen door size ₱ doz $1.80 }
No. 5, Screen Door Size....₱ doz $2.00 } dis 25%
No. 6, Medium....₱ doz 2.50 }
No. 7, Large....₱ doz 3.50 }
Sabin's Lever..No. 1, $1; 2, $1.50; 3, $2; 4, $2.50; dis 30%
Sabin's Boss....₱ doz $4.20, dis 40&10%
Philadelphia....5 in., $5.00; 8 in., $7.00, dis 35%
Barker's Concealed....dis 20%
Cowell's....No. 1, $18.00; No. 2, $15.00 ₱ doz, dis 50%
Rubber, complete....₱ doz $1.90, net

Drawing Knives.
Crossman's No. 1....dis 65&1%
D. R. Barton Tool Co....dis 20%
Hart Mfg. Co., extra....dis 65&5&10&2%
Merrill....dis 60&10%
Nobles Mfg. Co....dis 15%
Bradley's....dis 35%
Adjustable Handle....dis 20%
Witherby Tool Co....dis 60&10%
Douglass'....dis 70%

Drills and Drill Stocks.
Blacksmiths'....each $2.15 net
" Self-Feeding....each $7.50, dis 10%
Breast, P. S & W....dis 25%
" Hotchkiss....dis 10
" Wilson's....dis 20%
" Miller's Falls....each $2.50, dis 25%
Ratchet, Merrill's....dis 20%
" Ingersoll's (old list)....dis 35%
" Whitney's....dis 30%
" Weston's....dis 20%
" Moore's Triple Action....dis 20 @ 25%
Whitney's Hand Drill....dis 20&10%
Wilson's Drill Stocks....dis 10%
Automatic Boring Tools....each $2.75, dis 20%
Drill Chucks.—Morse's Beach Patent....dis 30%
" Adjust..each $10.00, dis 30%
Danbury....$8.00, dis 30%

Egg Beaters.
Dover....₱ doz $5.00, dis 20%
Family....₱ doz $3.00 net
National....₱ doz $4.50, dis 33⅓%
Schofield....₱ doz $3.50

Elevator Buckets.
Mill E. Buckets, light, 3½ to 10 in., (Duc's Improved) ₱ 100 $15.00 @ $54.00, net
Mill E. Buckets, heavy, 5 to 10 inches (Duc's Improved) ₱ doz $5.60 @ $10.20, net

Emery.
Genuine Chester—Regular Nos....₱ ℔ 5¼c } dis.
" " Flour and FF....₱ ℔ 4 c } 10%
Washington Mills—Regular Nos....₱ ℔ 8c
" Flour....₱ ℔ 5c
Wellington Mills, Grain....₱ ℔ 10c net
" " Flour....₱ ℔ 8c net
Hampden Emery Grain....5c net
" " Flour....3c net

Enameled and Tinned Ware.
Kettles....dis 40 @ 50%
Sauce Pans....dis 30 @ 35%
Tinned Sauce Pans....dis 30 @ 35%

Escutcheons.
Door Lock....Same discounts as Door Locks
Brass Thread....dis 60&10%
Wood....dis 25%

Faucets.
Fenn's....dis 50%
Fenn's Cork Stops....dis 40%
Star....dis 55&10%
Frary's Patent Petroleum....dis 20&10%
Wood and Metallic....dis 40%
West's Patent Key....dis 40%
Metallic Key, Leather Lined....dis 30&10%
Cork Lined....dis 65&10%
Enterprise (Self Measuring)....₱ doz, $36.00, dis 20%
Felloe Plates....₱ ℔ 15c, dis 50%

Files.
American File Co....$5.00 to £ currency dis 35%
Auburn....$5.00 to £ currency, dis 25%
Arcade....$5.00 to £ currency, dis 30%
G. & H. Barnett....dis 25%
Nicholson....(Nicholson List) dis 35%
Heller & Bros....$5.00 to £ currency, dis 20%
Madden & Cockayne File Co....$5.00 to £ cur., dis 25%
Jowitt's....$4.50 to £ gold
J. & Riley Carr....4.50 to £ gold
Stubs'....$7.00 @ 7.50 to £ gold
Butcher's....4.50 to £ gold
Walter Spencer & Co.'s "Diamond"....4.50 to £ gold
Fisher's....4.75 to £ gold
Moss & Gamble....4.50 to £ gold
H. Disston & Sons (new list)....dis 35%
Limet & Co. (French)....$4.25 to £ gold
Boynton's Cant....dis 40%

Fluting Machines.
Knox, 4-inch Rolls....$2.10 each net
" 6 " "....$2.50 each net
" 8 " "....4.40 each net
Peerless, 4-inch Rolls....4.00 each net
" 5 " "....4.75 each net
Eagle, 3½-inch Roll....$30.00 ₱ doz, dis 45%
" 5½ " "....40.00 ₱ doz, dis 45%
Empire....$4.00 each net
Eureka, No. 1, 7-inch Roll....6.75 each net
" No. 2, 5-inch Roll....5.00 each net
Crown, 4½-in. Roll, $4; 6-in., $4.75; 8-in., $7.25 each, dis 45%
Champion, 4 in., $2.15; 6-in., $2.50; 8-in., $4.00 each, net
Domestic Fluter....1.50 each net
Geneva Hand Fluter....$15.00 ₱ doz, dis 10%
Combined Fluter and Sad Iron....₱ doz 15.00, dis 10%
Fluting Scissors....dis 40&10%

Forges
"Empire"....dis 20%
Keystone Portable Forge Co....dis 20%

Forks.
Hay, Manure and Spading....new list, dis 15
Plated "A 1, Rogers & Bro....dis 40&5% cas
" Reed & Barton....dis 40&5%

Fruit and Jelly Presses.
Enterprise Mfg. Co....dis 20%

Fry Pans.
Burnished, P. S. & W., new list....dis 60%

No.	0	1	2	3	4	5	6	7	8
₱ doz.	$3.00	$3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00

Gauges.
Marking....dis 50&10%
" Star....dis 35%
Wire....dis 10%
" Smith's Patent....₱ doz $18.00, dis 40%

Gimlets.
Nail and Spike....dis 40@45%
"Bee" Gimlets....₱ gross $12.00, dis 45%
"Eureka" Gimlets....dis 40%
"Diamond" Gimlets....dis 20&10%
Double Cut, Shepardson's....dis 40%
" " Hartwell's....dis 50%
" " Ives'....dis 40&10%
" " Douglass'....dis 40%

Glue Pots.
Tinned and Enameled....dis 40%
Family, Howe's "Eureka"....dis 25%
" L. F. & C.'s "Handy"....dis 25%

Grindstone Fixtures.
Sargent's Patent....dis 70&10&10%
Reading Hardware Co....dis 40&10&2%
" " " "Keystone"....dis 45&10&2%
Hart Mfg. Co., Nos 9 to 11....dis 50&10%
Rick Bros....dis 45&5%

Hammers.
Maydole's (new list on A. E. Bell Face)....dis 15%
Cheney's Steel Face and Claw....dis 10%
" all Steel....dis 20&10%
Verree....dis 5%
Magnetic Tack....dis 25&10%
Warner & Noble's....dis 10%

Hand Cuffs and Leg Irons.
Providence Tool Co.'s Hand Cuffs, $15.00 ₱ doz } dis 10%
" " Leg Irons, $25 ₱ doz }
Tower's....dis 25%

Handles.—Door or Thumb Latches—

Nos.	0	1	2	3	4	
Per doz.	$0.80	1.00	1.18	1.35	1.50	dis 65&10%

Roggin's Latches....33c net
Bronzed Iron Drop Latches....₱ doz $0.85 @ $1.00 net
Jap'd Store Door Handles—Nuts, $1.40; Plate $0.95 no Plate, 75c....net
Barn Door....per doz $5.00, dis 65&10&10%
Wrought Chest....dis 60&10%
Surface Chest, Sargent's list....dis 60&10&10%
Flush Chest....dis 60&10&10%
Lifting....dis 60&10%
Saw and Plane....dis 35&10%
Boynton's X Cut (Loop)....dis 20%
" " (Centennial)....dis 15%
Hammer and Hatchet....dis 20%
North Carolina Handle Co....dis 20%
Brad Awl....₱ gross $3.75, dis 25&10%
Hickory Firmer Chisel, assorted, ₱ gross $5.25 }
" " " large, " 6.50 }
Apple " " assorted, " 6.00 }
" " " large, " 7.50 } dis 40%
Socket " " assorted, " 4.50 }
" Framing " assorted, " 7.00 }
File, assorted, ₱ gross....3.50 }
Auger, assorted, ₱ gross....6.00 }
" large, "....7.00 }
Patent Auger, Ives'....dis 25&10%
" Douglass'....₱ set $1.25, dis 10%
" Swan's....₱ set $1, dis 20&10%

Hangers.
Anti-Friction....dis 50&5%
Barn Door....dis 70&10 @ 75&10%
Novelty....dis 40%
Challenge....dis 50%
Climax (Anti-Friction)....dis 50%
Sterling Improved (Anti-Friction)....dis 70&10%
Cheritree....dis 20%

Harness Snaps.
Henshaw's....List of 1½ changed to $14.00, dis 50%
Judd's....14.00, dis 50&10%
Fitch's (Bristol)....14.00, dis 50%
Hotchkiss'....dis 10%
Andrews'....dis 50%
Sargent's....dis 60&10%
New York Wire....dis 20&20%
"German"....dis 60%

Hatchets.

	Nos.					
Isaiah Blood						dis 15%
Shingling,	Nos. 1 2 3	₱ doz	$7.25	$8.00	$8.75	
Claw,	Nos. 1 2 3	₱ doz	7.75	8.50	9.25	
Lathing,	Nos. 1 2 3	₱ doz	7.50	8.00	8.50	
Hunt's						dis 25%
Shingling,	Nos. 1 2 3	₱ doz	$7.25	$8.00	$8.75	
Claw,	Nos. 1 2 3	₱ doz	7.75	8.50	9.25	
Lathing,	Nos. 1 2 3	₱ doz	7.50	8.25	9.00	
Hurd's						dis 30&10%
Shingling,	Nos. 1 2 3	₱ doz	$8.00	$8.50	$9.00	
Claw,	Nos. 1 2 3	₱ doz	9.00	9.50	10.00	
Lathing,	Nos. 1 2 3	₱ doz	8.00	8.50	9.00	
Simmon's						dis 35%
Shingling,	Nos. 0 1 2 3	₱ doz $7.50	$8.00	$8.50	$9.00	
Claw,	Nos. 1 2 3	₱ doz	9.00	9.50	10.00	
Lathing,	Nos. 1 2 3	₱ doz	8.00	8.50	9.00	
Broad,	Nos. 1 2 3 4	₱ doz 9.00	10.00	12.00	14.00	
"	Nos. 5 6 7 8	₱ doz 16.00	18.00	20.00	22.00	
Collins'						dis 10%
Shingling,	Nos. 1 2 3	₱ doz	$6.00	$6.50	$7.00	
Claw	Nos. 1 2 3	₱ doz	6.50	7.00	7.50	
Lathing,	Nos. 1 2 3	₱ doz	6.00	6.50	7.00	
D. R. Barton Tool Co.						dis 20%
Shingling,	Nos. 1 2 3	₱ doz	$11.00	$10.50	$10.00	
Lath,	Nos. 1 2 3	₱ doz	10.50	10.00	9.50	
Half Hatchets.	Nos. 1 2 3	₱ doz	11.00	10.50	10.00	
M. H. Jones & Co.						dis 40%
Shingling,	Nos. 1 2 3	₱ doz	$8.00	$8.50	$9.00	
Half Hatchets,	Nos. 1 2 3	₱ doz	8.00	8.50	9.00	
Claw,	Nos. 1 2 3	₱ doz	9.00	9.50	10.00	
Lathing,	Nos. 1 2 3	₱ doz	8.00	8.50	9.00	
Broad,	Nos. 2 3 4	₱ doz	11.00	13.00	14.50	
"	Nos. 5 6 7	₱ doz	16.50	18.00	19.50	

Hay Knives.
"Lightning"....₱ doz $20.00 net
Wadsworth's....dis 30%

Hinges.
Gate, Western....₱ doz $6.25, dis 60&10%
" N. E....₱ doz $10.13, dis 60&5&10%
" N. E. Reversible....₱ doz $6.50, dis 60&10%
Gate, Clark's No. 1....₱ doz $6.00, dis 50%
" N. Y. State....₱ doz $7.20, dis 60&10%
" Automatic....₱ doz $12.50 dis 20&10%
" Common Sense....dis 20%
" Seymour's....dis 40&10%
Rolled Blind Hinges....dis 60&10%
Rolled Plate....dis 70&10%
Rolled Raised....dis 70&10%
Wrought Strap and T, list Dec. 20, '77....dis 60&10%
Plate Hinges } 6 to 10 in. 5¼c ₱ ℔ } ....dis 10%
"Providence" } over 10 in. 4½c ₱ ℔ }
Screw Hook and Strap....{ 8, 10, 12 in., 11c; 14 to 36 in., 9½c } dis 40&10%
Heavy Welded Hook....{ 8 to 12 in., 11 c; 14 in. & up, 9½c } ..dis 30%
Screw Hook and Eye....{ ¾ to 1 in., 11 c; ⅝ in. 11½c; ½ in. 13 c } ....net

Hoes.—Solid Shank, C. S....₱ doz $5.25, dis 15%
Socket....₱ doz 5.75, dis 15%
Riveted Eye....₱ doz
Grub....dis 30%
Planters'....dis 35 @ 40%
Scovill Pattern....dis 25 @ 30%
Handled Solid C. S. Shank....dis 35%
Planters', Handled....dis 35%
Scovill Pattern, Handled....dis 35%
Hick's Pat. Solid C. S. Planters'....dis 20&10 @ 30%
" " " Scovill Pattern. dis 20&5 @ 25%

Hooks.
Bird Cage, Sargent's list....dis 60&10&10%
Cotton....dis 50%
Cotton (Humason & Beckley Mfg. Co.)....dis 25%
Belt, (new list) ₱ c....dis 30&10%
Bench—Hotchkiss', $5.00 ₱ doz....dis 10%
" Weston's, No. 1, $10.00; No. 2, $9.00 ₱ doz dis 25%
" McGill's, $3.00 ₱ doz....dis 10%
" Skinner's, $6.25 per doz....dis 20%
Clothes Line, Hart's list....dis 60&10&5&10%
" Sargent's list....dis 66⅔&10%
" Reading list....dis 45&10&2%
Ceiling.. / Harness. } Hart's list....dis 70&10%
" Sargent's list....dis 70&10%
" Reading list....dis 45&10&2%
Coat and Hat, Hart's list....dis 65&5&10%
" " Sargent's list....dis 66⅔&10%
" " Reading....dis 45&5&10&2%
" " T. & S. Mfg. Co's list....dis 25%
Tassel (T. & S. Mfg. Co.)....dis 40%
Wrought Staples and Hooks and Staples....dis 75%
" Staples, Stanley's list....dis 40%
Wire Screw Hooks and Eyes....dis 70&10%
Grass and Bush....dis 40 @ 45%
Whiffletree—Patent....dis 40%
Hooks and Eyes—Malleable Iron....dis 60&10&10%
" " Brass....dis 60&10&10%

Horse Nails.

	Nos. 5	6	7	8	9	10	
Ausable....₱ ℔	30c	27c	25c	24c	23c	22c	dis 20%
" Finished, Polished or Blued...	31c	28c	26c	25c	24c	23c	
Bridgewater Iron Co. Pointed and Polished (Nos. 5 6 7 8 9 10)	26c	23c	21c	20c	19c	18c	
	Nos. 5	6	7	8	9	10	
Cortland	29c	26c	24c	23c	22c	21c	dis 15
" P't'd & Blued.	31c	28c	26c	25c	24c	23c	@ 25%
Globe (New list).. Nos.	5	6	7	8	9	10	
	26	23	21	20	19	18c	net
H. P. Pointed and Finished	26	23	21	20	19	18	dis 20%
North Western Fini'h'd	26	23	21	20	19	18c	net
" " Plain	25	22	20	19	18	17c	net
National. Pointed and Polished, Pat. Fin.		25	23	22	21	20c	net
Putnam Hammer, P't'd	26	23	21	20	19	18c	net
Vulcan P't'd & Blued..	26	23	21	20	19	18c	net

Horse Shoes.—Burden....₱ keg $3.62½
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy....₱ keg 3.37½
Mule Shoes....₱ keg 4.37½
Perkins' Snow....₱ keg 3.87½

Ice Awls, Chisels, &c.
American Ice Chisel....₱ doz $6.50 net
National "....₱ doz $6.25, dis 20%
Novelty Ice Breakers....₱ doz $6.25 dis 20%
White's Sliding Head Picks....₱ doz $2.50 dis 40%
Dunlap's Ring Picks....₱ doz 3.00, dis 25%
Wood Head Picks, Sargent's....₱ doz $1.85, dis 60&10%
Iron "....₱ doz 1.85, dis 60&10%
Ice Mallets, Pickin Head....₱ doz $1.75 net
" Pick in Handle....₱ doz 3.00 net
Ice Axes, Small Cast or Malleable....₱ doz 1.25 net
Kitchen Ice Tongs....₱ doz 2.25 net
Combination Ice Tools....₱ doz $2.50, dis 30&10%

Kettles.
Brass, 7 to 13 inches inclusive....₱ ℔ 35c net
Brass, larger than 13 inches....₱ ℔ 40c net
Enameled....dis 60%

Knives.
Ames' Butcher Knives....dis 20%
" Shoe....dis 15%
" Bread....₱ doz $1.50, dis 15%
Hay and Straw—"Wadsworth's"....dis 30%
Table and Pocket....See Cutlery

Knobs.
Carriage (Jap'd 80c. ₱ gross)....dis 60&10%
Base—Common....dis 30&10%
" Plush Tip....dis 10%
" Elastic End. No. 8....dis 65&5%
Door, Mineral; " Por. Jap'd; " " Plated; " " Por. } Same discounts as Door Locks.
Furniture, Plain....75c gross inch, dis 10%
" Wood Screws....dis 20%
Picture (T. & S. Mfg. Co.)....dis 50%
" Sargent's....dis 60&10

Ladles.
Melting—Hart's....dis 55&10%
" Sargent's....dis 50&10%
" Reading....dis 15&10%
" Monroe's Patent....₱ doz $4.00, dis 20%

Lanterns.
Tubular....No. 0, $10.00; No. 1, $11.50; With Guards, 50c extra....net
Hurricane....dis 25%
Peerless....No 5, ₱ doz $11.75, dis 10&10%
Brady's Patent....dis 10&10%
Ætna....dis 10&10%
Yankee....dis 10&10%
De Beque....dis 10&10%
Police....Small, $7.50; Med., $9.00; Large, $12.00, dis 20%

Lard Presses.
Draw Cut, 14 inch....each $65.00, dis 20%
Enterprise Mfg. Co....dis 20%

Lemon Squeezers.
Porcelain Lined....₱ doz $4.00 net
Eureka, Tinned....₱ doz $10.00, dis 10%
Dunlap's Improved....₱ doz $4.00 net
Sammis' Patent....No. 1, $7.50; No. 2, $12.00 ₱ doz....dis 25&10%
Lines.—Linen Fish....dis 25%
Cotton Chalk....dis 50%
Sil. Lake Chalk....Nos. 0, 1, 2, 3, $6.00, $6.50, $7.00, $7.50....dis 20%
Mason's Linen....dis 20%
Wire Clothes, Galvanized....each 35 @ 43c net

Locks and Latches.
Cabinet—Gaylord }
" Eagle... } ....dis 25&2%
" Barnes & Deitz....dis 30%
" Bridgeport Lock Co....dis 25&2%
Trunk....dis 25%
Langstroth & Crane's List Jan. 1, '77.
Round Key....dis 40&10%
Flat Key....dis 33⅓&10%
Barnes & Deitz, Flat Key....dis 30%
Yale Lock Co., Flat Key....dis 40%
Shepardson's, Flat Key....dis 35%
American Lock Mfg. Co....dis 33⅓%
Plate....dis 33⅓&5&2%
F. Many's "Extension Cylinder"....$10.50 ₱ doz, net

DOOR LOCKS, &C.
Branford....dis 60&10&2%
Norwalk....dis 50&10&2%
Norwich....dis 50&10&2%
Russell & Erwin....dis 60&10&2%
Mallory, Wheeler & Co....dis 35&10&2%
Reading Hardware Co....dis 35&10&2%
Padlocks—Russell & Erwin } ....dis 33⅓&5%
" Mallory, Wheeler & Co.... } and 2% for cash
" Wm. Wilcox & Co.... }
" D. K. Miller Lock Co....dis 25%
" American Lock Mfg. Co....dis 33⅓%
" Romer's....dis 30%
" Vulcan Hardware Co....dis 20%
" J. H. McWilliams....dis 10%
" Barnes & Dietz....dis 30%
" Penn Lock Works....dis 30%

Mallets.—Hickory and Lignumvitæ....dis 10&10%

Meat Cutters.
Dixon's (P. S. & W.) Nos. 1, 2, 3, 4 — ₱ doz..$14.00, 17.00, 19.00, 30.00—dis 25%
Miles' Challenge....Nos. 1, 2, 3 — ₱ doz..$22.00, 30.00, 40.00—dis 30%
Perry's Nos. 1, 2, 3, 4, 4 g'rd, 5 g'rd — Each..$3.00, 4.00, 5.00, 11.00, 13.00, 36.00—dis 20&10
Woodruff's (P. S. & W.)....Nos. 100, 150 — ₱ doz..$15.00, 18.00—dis 20&10%
Hales'....Nos. 11, 12, 13 — ₱ doz..$33.00, 40.00, 51.00—dis 50&2%
Draw Cut....Nos. 5, 2, 6, 8, 10 — Each..$50.00, 75.00, 80.00, 225.00, 400.00—dis 20%
American....dis 25%
Nos.... 1, 2, 3, 4, B, 5 — Each....$5.00, 7.00, 10.00, 25.00, 50.00, 60.00

Molasses Gates.
Stebbins Pattern....dis 62½&10%
" Genuine....dis 60&10%
" Tinned Ends....dis 40&10%
Chase's Hard Metal....dis 30%
Bush's....dis 20%
Lincoln's Genuine....dis 60%
Weed's....dis 15%

Mortars and Pestles.
Iron....net
Mortising Machines....each $20.00, dis 20%

Nails....See Trade Report
Nuts and Washers.
Square and Hexagon....7c off list
Nut Crackers
Table (Humason & Beckley Mfg. Co.)....dis 33⅓%
Blake's Pattern....₱ doz $2.35, dis 10%

Oakum.
Best....₱ ℔ 9½c
U. S. Navy....₱ ℔ 8½c
Navy....₱ ℔ 7½c
Oilers.—Zinc and Tin....dis 45%
Brass and Copper....dis 40%
Olmsted's....dis 40%
Broughton's....dis 40%
Malleable (Hammer's)....₱ doz $5.00, dis 10%
Prior's Patent or "Paragon"....dis 40%
Ox Balls....dis 60&10%

Pencils.
Faber's Carpenters'....dis 10%
" Round Gilt....₱ gross $5.25 net
Dixon's Lead....₱ gross 4.50 net
" Lumber....₱ gross 7.50 net

Peach Parers.
Lightning....₱ doz $12.00, dis 10%

Picture Nails and Knobs.
Brass Head, Sargent's List....dis 50&10&10%
Porcelain Head....dis 50&10&10%
" Judd's List....dis 40%
Porcelain Head, T. & S. Mfg. Co....dis 40%
Pinking Irons....₱ doz $2.75, dis 70&5%

Plaiting Machines.
Magic....₱ doz $10.00, net
Astor Plaiting Machine....each $15.00, dis 20%
Crown Plaiting Machines....dis %
6in., $6.00. 10in., $10.00, each.

Planes and Plane Irons.
First Quality....dis 35&10%
Second "....dis 50&10%
Bailey's Patent Adjustable, new list Jan. '77, dis 25&10%
Bailey's "Victor" " " dis 25&10%
Defiance Adjustable, new list....dis 25&10%
D. R. Barton Tool Co....dis 20%
Plane Irons, Butcher's....$5.50 to £ gold
" Buck Bros....$5.00 to £ gold
" Bailey's Patent....dis 25&10%
" Auburn Tool Co.'s....dis 25%
" Defiance....dis 25&10%
" D. R. Barton Tool Co....dis 20%
" Middletown Tool Co....dis 10%
" Ohio Tool Co....dis 10%
" Spear & Jackson's....$5.00 to £ gold
" Sandusky Tool Co....dis 10&10%

Pliers and Nippers.
Button's Patent....dis 33⅓%
Hull's Patent Nippers, No. 1, $15; No. 2, $21 ₱ doz, dis 25%
Humason & Beckley Mfg. Co....dis 33⅓%
Gas Pliers....dis 30&10%
Eureka Pliers and Nippers....dis 25%
Russell's Parallel....dis 25%
P. S. & W. Cast Steel....dis 30%

Plumbs and Levels.
Disston's....dis 60&10%
Stanley R. & L. Co.'s Pat. Adjustable....dis 60&10%
" " " Non-Adjustable....dis 60&10%
Chapin's Patent Adjustable....dis 60&10%
" Non-Adjustable....dis 65&10%
Standard Rule Co.'s New Adjustable....dis 60&10%
" " Non-Adjustable....dis 60&10%
Johnson's Patent Adjustable....dis 60&10%
Davis' Patent....dis 60&10%
Pocket Levels....dis 60&10%

Post Hole and Tree Augers.
Samson Post Hole Digger....per doz $36.00, dis 20%
Fletcher Post Hole Augers....₱ doz 36.00, dis 20%
Vaughan's Post Hole—
6 in. $23.60; 7, 8 and 9 in. $25 per doz....dis 20
Leed's....$5.00 each, dis 35%

Potato Parers, &c.
Bay State....₱ doz $13.00 dis 10%
"Saratoga" Peeler and Slicer....₱ doz 7.75 dl

Pruning Hooks.
Disston's Combined Pruning Hook and Saw per doz $18.00, dis 20%
" Pruning Hook....11.50, dis 20%

Pulleys.
Judd's Axle....₱ doz $0.50, dis 20&10%
Hot House and Tackle....dis 66⅔&10%
Jap'd Screw....dis 66⅔&10%
Brass Screw....dis 60&10%
Jap'd Side....dis 66⅔&10%
" Clothes Line....dis 66⅔&10%
Hay Fork Solid Eye, $4.50; Swivel, $5.00, dis 40&10&10%
" "Anti-Friction,"....$7.50 dis 20%

Punches.
Belt or Drive....₱ doz $2.00; 2.25; 2.50, dis 30
Spring....₱ doz $7.00, dis 10%
" Leach's Patent....dis 15%
" Bemis'....dis 20%
Solid, Tinners'....₱ doz $1.44, dis 30%

Rail.
Sliding Door, Wrought Brass....₱ ℔ 40c dis 10%
" " Iron, Painted..₱ foot 9c, dis 55&10%
Barn Door, ½, ⅝ and ¾ inch....dis 75&10%
" for N. E. Hangers....dis 70&10%

Rakes.
Cast Steel....dis 15%

8	10	12	14	16 teeth.
$5.00	5.75	6.50	7.25	8.00

Malleable....dis 15%

10	12	14 teeth.
$3.60	4.00	4.40

Razor Straps.
Genuine Emerson....dis 30@33⅓%
Badger's Emerson....dis 20%
Badger's (not Emerson)....dis 25%
Evans'....dis 40%
Imitation Emerson....₱ doz $2.75, dis 40&10%
Hunt's....dis 40&5%
Chapman....dis 10 @ 15%
Torrey's....dis 20%
Saunder's....dis 10 @ 15%

Rivets.
Iron and Tinned....dis 50%
In bulk, new list of Jan. 10, 1878....dis 40%
Copper Rivets and Burs....dis 25%

Nos.	7	8	9	10	11	12	13	14	15
₱ ℔	49c	50c	52c	54c	56c	58c	60c	65c	70c

Rivet Sets....dis 40%

Road and Levee Scrapers.
Doty's Revolving....dis 25%

Rods.
Stair....dis 50%
" American Patent....dis 33⅓%

Rollers.
Barn Door, Sargent's list....dis 70&5&10%
Novelty....dis 10%
Acme (Anti-Friction)....dis 50%

Rope. Manufacturers' List, Jan. 2, 1878
Manila....½ inch and larger ₱ ℔ 12½c
"....⅜ inch ₱ ℔ 13 c
"....¼ and 5-16 inch ₱ ℔ 13½c
" Tar'd Rope....₱ ℔ 12 c
" " Lath Yarn....₱ ℔ 13½c
" Hay Rope....₱ ℔ 12½c
Sisal....½ inch and larger ₱ ℔ 11 c
"....⅜ inch ₱ ℔ 11½c
"....¼ and 5-16 inch ₱ ℔ 12 c
" Hay Rope....₱ ℔ 11 c

Rules.

	Boxwood.	Ivory.
Chapin's, Stanley, Standard, Stephens', Willis, Thrall & Son	dis 60, 10&10%	dis 50, 10&10%
Stearn's	dis 50&10%	dis 40&10%

Sad Irons.
From 4 to 10 lbs....₱ ℔ 2½c net
Self-Heating....₱ doz $8.75 net
" Tailors'....₱ doz $17.50 net
Gleason's Shield and Toilet....dis 25%
Enterprise Patent Cold Handle....dis 33⅓%
Mrs. Pott's Pat. Cold Handle, "Crown"....dis 33⅓%
Combined Fluter and Sad Iron..per doz $15.00, dis 15%

Sand Paper.
Baeder & Adamson's Flint, 00 to 1½..$4.25 ₱ ream }
" " " 2, 2½ & 3. 4.75 ₱ ream } dis
" " Assorted 4.25 ₱ ream } 15@
" " Star....3.25 ₱ ream } 20%
" " Emery..₱ ream $6.50 @ 11.50 }
New England, same list as B. & A. Flint....dis 15@20%

Sash Cord.
Common....₱ ℔ 16 @ 18c net
Patent....₱ ℔ 18c net
Silver Lake Russia Flax....₱ ℔ 55c net
" White Cotton....₱ ℔ 55c net
" Drab Cotton....₱ ℔ 60c net
Raw Hide....dis 25%
Steel Ribbon....dis 10%

Sash Locks.
Clark's, No. 1, $10.00; No. 2, $8.00 per gross...dis 40@45%
Ferguson's....dis 33⅓%
Walker's....dis 10%
Hammond's Window Springs....dis 25%
Northup Window Springs....$9.00 per gross, dis 10%
Sash Weights.—Solid Eyes....₱ ℔ 1¾c

Sausage Stuffers or Fillers.
Miles....₱ doz $20, dis 30%
Perry....₱ doz, No. 1, $15; No. 0, $21, dis 30%
Draw Cut No. 4....each $30.00, dis 20%
Enterprise Mfg. Co....dis 20%
Silver's....dis 25%

Saws.
Disston's Circular....dis 30%
" Mill....dis 30%
" Cross Cut....dis 20%
" Hand, Panel, Rip, &c....dis 20%
H. W. Peace's Circulars....dis 25%
" Mill, Gang and Mulay....dis 25%
" Cross Cut, Wood, Hand, &c....dis 20%
E. M. Boynton's Lightning, Cross Cuts....dis 50&5% }
" One-Man, all lengths....dis 40&5% }
" Buck Saws (X Bar)..₱ doz $15, dis 40&10% } 5% cash.
" Billet Webs....₱ doz $10, dis 40&5% }
" Pruning....dis 40% }
Wheeler & Clemson Mfg. Co.'s Hand....dis 20%
" " " Cross-Cut....dis 35%
Livingston's Butcher and Kitchen....dis 20%
Framed Wood—

Nos.	101	102	103	104	105	
Per doz.	$10.00	8.50	10.00	7.50	6.25	net

Saw Frames.
White, Vermont....₱ doz $1.35, dis 15%
Red, Polished and Varnished....₱ doz $2.00, dis 15%
Saw Rods....$10 list dis, 10&10%

Saw Sets.
Boynton's Patent....dis 40%
Stillman's Genuine....₱ doz $4.25 net
" Imitation....₱ doz $3.25, dis 25%
Common Lever....per doz $2.00, dis 25%
Leach's....No. 0, $8.00; No. 1, $15.00, dis 15%
Nash's....No. 1, $8.50; No. 2, $5.50, dis 20&10%
Hammer, Hotchkiss....$5.50, dis 10%
" Bemis & Call' Co.'s New Pat....dis 20&30%
Bemis & Call Co.'s Spring Hammer, New Pat. Lever....dis 20&10%
" Aiken's Genuine....$13.00, dis 40&10%
" " Imitation....$7.00, dis 40%
" Hart's Patent Lever....dis 20%

Scales.
Hatch, Counter....₱ doz $36, dis 40%
" Tea....₱ doz $15, dis 40&10%
Union Platform....$6.00, $7.00, dis 45%

Turnbull's....dis 20 @ 25 %
Brown's....dis 25&5
Fairbanks'....dis 20&5 %
Howe's....dis 20&5 %
Chatillon's Grocers'....dis 25 %
" Eureka....dis 20 %
Universal Family....dis 25 %
Favorite Family....dis 25 %
Scale Beams, Chatillon's list....dis 25 %
" Sargent's list....dis 60&10 %

Scrapers.
Box, 1 Handle....₩ doz $5.00, dis 10 %
" 2 "....₩ doz 6.00 dis 10 %
Defiance Box and Ship....dis 25&10 %
Foot....dis 60&10 %
Ship (common)....per doz $3.00 net
" (Providence Tool Co....dis 10 %

Screw Drivers.
Hart, Bliven & Mead, new list....dis 45&10 %
Douglass Mfg. Co....dis 35&10 %
Disston's....dis 45 %
Disston's Patent Excelsior....dis 60 %
Buck Bros....dis 25 %
Stanley Rule & Level Co.,Black Handles....dis 35&10 %
" " " Varnished H'le..dis 45&10 %
Sargent & Co.'s....dis 50&10 %

Screws.
Flat H'd Iron list Sept. 1, '75....dis 55 %
Round Head Iron "....dis 45 %
Flat Head Brass, list Sept. 1, '75....dis 50 %
Round Head Brass. list Sept. 1, '75....dis 35 %
Brass and Silver Capped....dis 40 %
Japanned, list of Plain Screws....dis 45 %
Lag or Common Coach....dis 65 %
Coach, Patent Gimlet Point....dis 40 @ 45 %
Bed....dis 10 %
Machine, Flat Head, Iron, Am. Screw Co....dis 25 %
" Round Head, Iron, "....dis 20%
Bench, Iron....dis 55&10 %
" Wood, Beach....₩ doz $3.00, net
" " Hickory....dis 20&10 %
Hand....dis [illegible]
Hand Rail, Sargent's....dis 60&10 %
" " Humason, Beckley & Co.'s....dis 40&10 %
Jack Bell Bottom....dis 20%
Jack (Wilson's)....dis 30
Sash (T. & S. Mfg. Co.)....dis 25 %

Scythes.
Blood German Steel, Grass....₩ doz $10.00
" Cast, " "....₩ doz 11.00
" Silver " "....₩ doz 12.00
" German " Grain....₩ doz 14.00
" Cast " "....₩ doz 15.00 } dis $1.50 from list
Excelsior and Granger..₩ doz 11.00
Young America.... 10.50
Silv Clipper.... 13.00 } dis $1.50 from list
Wadsworth's Grass....dis 40 %
" Bush....dis 20 %
Scythe Snaths....dis 25

Shears and Scissors.
Cast Steel....dis 75 & 10 %
" Iron, 'American'....dis 45&5 %
Seymour's Straight Trimmers....dis 65 %
" Scissors....dis 65 %
Pruning....₩ doz $4.75 @ $4.50 net
Barnard's Lamp Trimmers....₩ doz $3.75
Tinners'....dis 20 %

Sheep Shears.
Ball's Pat. Solid Steel Bent....gold, net
Inches.... 5 5½ 6
Per doz.... $8.25 $8.75 $9.25

Sheaves.
Sliding Door, M. W. & Co., list....dis 35&10&2 %
" R. & E. list....dis 50&2 %
" Patent Roller....dis 25&2 %
" " " Hatfield's....dis 50&2 %
" Russell's Anti-Friction....dis 50&2 %
Sliding Shutter, R. & E. list....dis 50&2 %
" " Sargent's list....dis 55&10 %
Moore's Anti-Friction....dis 45 %

Shovels and Spades.
Ames....dis 32½ %
" not stamped "Ames"....dis 37½ %
Rowland's....dis 50 %
Kimball Shovel Co....dis 20 @ 20&5 %
Old Colony....dis 30 %
Middleboro' Shovel Co....dis 30 %
Remington's (Lowman's Patent)....dis 30 %
Dunning's Shovels and Scoops....dis 10&7½ %
B. Rowland & Co., Anchor Brand....dis 50 %
" Patent....dis 40 %
Oxford Patent....dis 40 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list....dis 50&2 %
" " Hart's....dis 50&10&2 %
Polished Steel....dis 50&2 %

Slates.
Square Frames, Round Cornered, by case....dis 70 %
Less than a case....dis 65&10 %

Spoke Shaves.
Defiance Metallic....new list, dis 25&10 %
Iron....dis 25&10 %
Wood....dis 30 %
Bailey's....dis 25&10 %

Spoke Trimmers.
Bonney's....₩ doz $10.00, dis 40 %
Stearn's....₩ doz $10.00, dis 40 %
Ives'....No. 1, $15.00; No. 2, $12.00 ₩ doz, dis 20&10 %
Douglass'....₩ doz $9.00, dis 20&10 %

Spoons.
Tinned Iron....dis 15 %
Basting....dis 30 %
Britannia....dis 60 %
Derby Silver Co....dis 40&5&5 %
L Boardman's Sons, A1....dis 40&5&5 %
Rogers & Bro., A 1....dis 40&5 % cash
Reed & Barton....dis 40&5 %
Rogers Cutlery Co....dis 40&5&5 %
Hall & Elton....dis 40&5 %
Holmes, Booth & Haydens....dis 40&5 %
German Silver (Hall & Elton)....dis 30&5 %
German Silver (L. Boardman's Sons)....dis 30&5 %
Diamond Steel (L. Boardman's Sons)....dis 30&5 %
Tin (P. S. & W.), Teas....$1.50 ₩ gross, net
" " Tables....$2.50 ₩ gross, net
Tin Cowles Hdw. Co.)....dis 10 %
" " " case lots....dis 20 %

Stocks and Dies....dis 25&10 %

Stone.
Hindostan Stone....₩ ℔ 6c
" Ax Stone....₩ ℔ 8c
" Slips....₩ ℔ 10c } dis 30&10 %
Sand Stone....₩ ℔ 6c, dis 30&10 %
Washita Stone (Boyd & Chase)....No. 1, ₩ ℔ 25c
" " ....No. 2, ₩ ℔ 20c
" Slips, " ....No. 1, ₩ ℔ 50c
Arkansas Stone, ...No. 1, ₩ ℔ $1.35
" Slips, " ....No. 1, ₩ ℔ $2.50 } dis 10 % @ net
Turkey Oil Stone....4 to 8in, $1.00 ₩ ℔, dis 10 %
" Slips....$2.50 ₩ ℔, dis 10 %
Grindstones, Family, Loring's....dis 10 %

Stove Polish.
Joseph Dixon's....₩ gross $6.00, dis 5 %
Gem....₩ gross $4.50, dis 5 %
Ruby....₩ gross $5.75, net
Gold Medal....₩ gross $6.00, dis 5 %
Rising Sun....₩ gross $5.75, net

Squares.
Steel....dis 50 %; full cases, dis 50&10 %
Iron....dis 50 %; full cases, dis 50&10 % } 2 % cash
Nickel Plated....add $2.50 @ $4.00 ₩ doz, net
Try Squares and T Bevels....dis 45&10 %
Star Try Squares and Bevels....dis 35 %
Disston's Try Squares and T Bevels....dis 45 %
Winterbottom's Try and Mitre....dis 20&10 %
Bailey's Try Squares and T Bevels....dis 25&10 %

Tacks, Brads, &c.
List of May, 1878....dis 50 @ 50&5 %
Shoe Nails, (new list)....dis 10 %
Double-Pointed Tacks....dis 40&5 %

Tap Borers.
Common and Ring....dis 20&10 %
Ives' Tap Borers....dis 10&10 %
Enterprise Mfg. Co....dis 20 %

Tapes, Measuring.
American....dis 20 @ 25 %
Spring Tapes....dis 25&10 %

Thermometers.
Tin Case....dis 60&10&10 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion)....dis 20 %
Wood Bottom....₩ doz $12.00, dis 30&10 %
All Iron....₩ doz $10.50, dis 40&5 %
Nashua Lock Co.'s....₩ doz $18.00, dis 50 %

Toe Calks.—Winsted....₩ ℔ 10c. dis 10 %

Tinners' Tools and Machines.
Machines (P. S. & W.)....dis 50&10 %
Tools (P. S. & W.)....dis 15&20 %

Traps.
Game, Newhouse....dis 30 %
" Newhouse Pattern....dis 60 %
" Blake's Patent....dis 40&10 %
Mouse, Wood, Choker....₩ doz holes, 13½c
" Patent Choker (Union Nut Co)....₩ doz holes, 16 @ 18c, net
" Round Wire....₩ doz $1.50, dis 10 %
" Cage "....₩ doz $2.50, dis 10 %
" Patent Self Setting....₩ doz holes, 15c, net
" Catch-em-alive....₩ doz $3.50, dis 10 %
Rat, "Decoy"....per doz $10.00, dis 10 %

Trowels.
Lothrops Brick and Plastering....dis 10 %
Disston's Brick and Plastering....dis 20 %
Peace's Plastering....dis 20 %
Clement & Maynard's....dis 20 %
Rose's Brick....dis 15 %
Brades' Brick....gold, dis 20 %
Worrall's Brick and Plastering....dis 20 %
Garden....dis 50 %

Triers.
Butter and Cheese....dis 25 %

Tuyere Irons.
Vulcan Pattern....$3.50 each, net

Vises.
Solid Box, Trenton....40 to 160 lbs.. 13½c, net
" Wilsons....32 to 160 lbs., 10c, net
" "Crown" (A. H. Hildicks) 40 to 100 lbs., 15c currency, dis 20 %
" Peter Wrights....15½c, gold
Parallel, Parker's....dis 20 %
" Wilson's....dis 50 %
" Howard's....dis 25 %
" Sargent's....dis 60&10 %
" Trenton....dis 25 %
" Backus and Union....dis 25 %
" Merrill's....dis 15 %
" Fisher & Norris....dis 15&10 %
" Buffalo....dis 25 %
" Stevens'....dis 25 %
" Simpson's Adjustable....dis 25 %
"Family," List....net
Saw Filers, Bonney's....₩ doz $24.00, dis 20&10 %
" Stearn's....dis 20&10 %
" Hopkins'....₩ doz $17.50, dis 10 %
Lowell Hand Vises....dis 20 %

Ventilators.
Protective (upper) per foot, $1.00
" (lower) " 1.50 } dis 25 %

Washer Cutters.
Smith's Patent....₩ doz $12.00, dis 10 %
Johnson's....₩ doz $12.00, dis 25 %
Penny's....₩ doz $14.00 and $16.00, dis 20&10 %
Appleton's....₩ doz $8.00, dis 10&10 %

Washers.—See Nuts and Washers.

Weather Strips.
Protective Ventilator Co. s....dis 25 %

Well Wheels.—Revised list....dis 60&10 %

Wire.
Brass and Copper.... List of July 1, 1878 dis 10 %
Bright and Annealed.... Nos. 0 @ 18, dis 52½ @ 55 %
" " .... Nos. 19 @ 26, dis 57½ @ 60 %
" " .... Nos. 27 @ 36, dis 62½ @ 65 %
Coppered.... Nos. 0 @ 18, dis 47½ @ 50 %
Galvanized, Nos. 0 to 6....₩ ℔ 10c, dis 30 @ 35 %
" Nos. 7 to 18....market list, dis 30 @ 35 %
Tinned, Nos. 0 to 18....dis 45 @ 47½ %
Cast Steel....dis 25 @ 30 %
Tinned Broom Wire, Nos. 18 to 25....dis 47½ @ 50 %
Annealed Fence, Nos. 8 and 9....dis 55 @ 57½ %
" Grape, Nos. 10 to 14....dis 55 @ 57½ %
Galvanized Telegraph, Nos. 7 to 9....₩ ℔ 8¼c
" " Nos. 10 and 11....₩ ℔ 9¼c
" " No. 12....₩ ℔ 10c
Fence Staples....₩ ℔ 7 @ 7½c
" Staples, Galvanized....₩ ℔ 9½ @ 10c
Stubs Steel Wire....$7.00 to £ gold
Japanned Barb Fence....₩ ℔ 15c
Galvanized "....₩ ℔ 16c
Steel Music Wire, Nos. 12 to 27....₩ ℔ $1.00, net
Judd's Picture Wire....dis 80&20 %
Clothes Line Wire, Galvanized....₩ coil 45 @ 43c net

Wire Cloth.
Clinton, green or drab, by the roll, per sq. ft. 3¼c net

Wrenches.
American Adjustable....dis 45 %
Baxter's Adjustable "S,"....dis 20 %
" Diagonal....dis 20 %
Collins & Co.'s....dis 45 %
Coes' Genuine....dis 50&10 %
" Pattern (Wrought)....dis 60&10 %
" " (Malleable)....dis 75&10 %
Girard....dis 50&10&10 %
Lindsay's "....dis 25 %
Taft's Pattern....dis 75&10 %
Davis' Patent Duplex....new list, dis 25 %
Bemis & Call's Patent Combination....dis 25 %
" " Merrick's Pattern....dis 25&2½&20 %
" " Briggs' Pattern....dis 25&10 %
" " Cylinder or Gas Pipe....dis 25&30 %
Aiken Pocket (Bright)....$8.00, dis 50&10 %

Wringers. Per doz.
Universal, Cog Wheels, No. 2½....$60.00
" " " No. 2....63.00
" " " No. 1½....71.00
Crown No. 2....54.00
" No. 2½....63.00
" No. 3....69.00
Eureka, No. 1....57.00
Novelty, No. 10, with Cog Wheels....60.00
" No. 2, "....63.00
Excelsior, No. A, with Folding Bench....84.00
" No. E, for Set Tubs....66.00
Keystone No. 1, Wood Frame, no Gear....54.00
" No. 2, Iron " "....54.00
" No. 10, Wood " Common Gear....60.00
Peerless, No. 2....63.00
" No. 3....71.00
" No. 2½....60.00

Stamped Tinware.
Common Stamped Ware, L. & G. List, April, 1878, dis 50&10 %
Stamped Deep and Retinned Ware, L. & G. List, April, 1878....dis 50&10 %

METALS.

IRON.—Duty: Bars, 1 to 1½c. ₩ ℔; Sheet, Band Hoop and Scroll, 1½ to 1¾c. ₩ ℔; provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 ₩ ton; Polished Sheet, 3c. ₩ ℔; Wrought Scrap, $8 ₩ ton; Cast Scrap, $6 per ton. Railroad 70c. ₩ 100 ℔s. Boiler and Plate, 1½c. ₩ ℔.

Pig Iron—American.
Foundry No. 1....₩ ton $16.50 @ 18.00
" No. 2....₩ ton 15.50 @ 17.00
Gray Forge....₩ ton 14.50 @ 16.00

SCOTCH.
Glengarnock....₩ ton 23.75
Eglinton....₩ ton 22.75
Coltness....₩ ton 24.00

Rails.
Iron, at mill....₩ ton $32.00 @ 36.00
Steel "....₩ ton 43.00 @ 44.00
Old Rails....₩ ton 18.00

Scrap.
Wrought Scrap, from yard..₩ ton, nom. 21.00 @ 23.00

Bar Iron, from Store.
Common Iron:
¾ to 2 in. round and square....
1 to 6 in. x⅜ to 1 in.... } ₩ ℔ 1 75c
Refined Iron:
¾ to 2 in. round and square....
1 to 6 in. x⅜ to 1 in.... } ₩ ℔ 2.0c
1 to 6 in. x¼ and 5-16....₩ ℔ 2.2c
Rods—⅝ and 11-16 round and square....₩ ℔ 2.1c
Bands—1 to 6x3-16 to No. 12....₩ ℔ 2.4c
Swedish Iron:
Ordinary sizes....5c

Sheet Iron.

	Common American.	R. G. American.
Nos. 10 to 20	₩ ℔ 2¾c	4
21 to 24	₩ ℔ 3 c	4
25 to 26	₩ ℔ 3¼c	4¼
27	₩ ℔ 3½c	4¾
28	₩ ℔ 3¾c	4½c

Galvanized, 14 to 20, B. B. ₩ ℔ 6¾c; 2d qual. ₩ ℔ 5¾c
" 21 to 24, " ₩ ℔ 7¼c; " ₩ ℔ 6 c
" 25 to 26, " ₩ ℔ 7¾c; " ₩ ℔ 6½c
" 27 " ₩ ℔ 8¼c; " ₩ ℔ 7 c
" 28 " ₩ ℔ 9 c; " ₩ ℔ 7½c
Patent Planished....₩ ℔ A, 10½c; B, 9½c
Russia, Nos. 8 to 16....₩ ℔ 11 @ 11½c
American Cold Rolled....₩ ℔ 4½c

COPPER.—Duty: Pig, Bar and Ingot, 5c; Old Copper, 4c ₩ ℔; Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.
American Ingot....₩ ℔ See Trade Report.

SHEATHING, BRAZIERS' COPPER, BOLTS, &C.
Braziers' Copper, ordinary sizes, over 16 oz., ₩ sq. ft....₩ ℔ 28c
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., ₩ sq. ft....₩ ℔ 30c
Braziers Copper, 10 oz and 12 oz., ₩ sq. ft....₩ ℔ 32c
" " Lighter than 10 oz. ₩ sq. ft..₩ ℔ 34c
Circles less than 84 in. in diameter....₩ ℔ 31c
Circles 84 in. diameter and over....₩ ℔ 34c
Segment and Pattern Sheets....₩ ℔ 31c
Locomotive Fire Box Sheets....₩ ℔ 28c
Sheathing Copper, over 12 oz. ₩ sq. ft....₩ ℔ 26c
Bolt Copper....₩ ℔ 28c
Copper Bottoms....₩ ℔ 30c
No Copper is Sheathing except 14x48 inches and not to exceed 34 oz. to the sq. ft.

TINNING.
14x48, by the case....₩ sheet 6c
14x48, less than case....₩ sheet 8c
For tinning both sides, double the above amount.

O'NEILL'S PATENT PLANISHED COPPER.
14x48.
14 and 16 oz. and heavier..₩ ℔ 34c By the case. ₩ ℔ 33c
12 oz. and lighter....₩ ℔ 37c " " ₩ ℔ 36c
Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60.
14 and 16 oz. and heavier. ₩ ℔ 36c By the case. ₩ ℔ 35c
(And all sizes not over 20 in. wide.)
30x60.
14 and 16 oz. and heavier....₩ ℔ 38c
12 oz....₩ ℔ 41c

Brass.
Brown & Sharp's Gauge the Standard for Meta[l]; Old English Gauge the Standard for Wire.
BRASS MANUFACTURERS' PRICE LIST.—dis 10 %.
July 1, 1878.
Cash prices for Roll and Sheet Brass. For less quantity than 100 ℔s. add 3c ₩ ℔.

HIGH BRASS.
All Nos. not thinner than to No. 28, wider than 2 in., not wider than 14 in....29c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive....30c
All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive....33c
½c. ₩ ℔ advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass, at....48c
Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 32c
Printers' Rules....40c
Sheets wider than 30 in. and under 40 in....42c
" " 40 in. and over....45c
Circular Sheets, in diam. from 4 in. to 14, inclusive. 35c
" " over 14 " 20, "....40c
" " " 20 " 30, "....44c
" " " 30 " 40, "....50c
" " " 40 in....54c

LOW BRASS.
4c ₩ ℔ more than High Brass.
Gilding Metal, 8c ₩ ℔ more than High Brass.
Platers' or Gold Metal { In Bars....43c; Sawed....46c; Planed or Polished....49c

FOR SLITTING.
Metal in width 2 in. to ½ in. to No. 28, inclusive, 1c. ₩ ℔ advance.
Metal, in width 2 in to 1 in., thinner than No. 28, 2c. ₩ ℔ advance.
Metal, in width 1 in. to ½ thinner than No. 28, 3c ₩ ℔ advance.
Metal, in width ½ in. to ¼, inclusive, not thinner than No. 28, 2c. ₩ ℔ advance.
Metal, in width ½ in. to ¼ thinner than No. 28, 5c. ₩ ℔ advance.
Metal, ¼ in. in width and less, 10c. ₩ ℔ advance.
Any of the above widths cut to particular lengths, add 7c. ₩ ℔.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent., 12 inch, to No. 26	$0.52	$0.70
6 " " "	.56	.76
10 " " "	.64	.88
15 " " "	.74	1.03
18 " " "	.80	1.12

German Silver Sheets over 12 in. wide and weighing more than 10 ℔s., $2.00 ₩ ℔.
Advance 2c. for each additional inch in width above 12 in., and 2c. ₩ ℔ on each No. thinner than Nos. 26 to 36, inclusive
All German Silver thinner than No. 36 is Platers, at 50c ₩ ℔ additional.
German Silver Scrap one-half less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Copper.
No. 0 to 20	$0.28	$0.32	$0.36
No. 21	.31	.35	.41
No. 22	.32	.36	.42
No. 23	.33	.37	.43
No. 24	.35	.39	.45
No. 25	.38	.42	.48
No. 26	.40	.44	.50
No. 27	.43	.47	.52
No. 28	.47	.51	.58
No. 29	.50	.54	.61
No. 30	.53	.57	.67
No. 31	.57	.61	.73
No. 32	.61	.65	.79
No. 33	.65	.69	.88
No. 34	.69	.73	.98

Spring Wire 2c ₩ ℔ advance.
Flat, Square and Half Round Wire 5c ₩ ℔ advance on Round Wire.
Fancy Wire not less than 10c ₩ ℔ advance of Round Wire.
Brass Rods, No. 8 and larger not less than 2 feet lengths, 33c.
Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 38c.
Wire and Rods less than 2 feet lengths, special rates.
Twelve cents per ℔ extra for spooling on 1 ℔ spools.

MISCELLANEOUS.
Common Plain Brass Pail Ears....$0.36
Brass Door Rail.....38

SCRAP.—net.
High Brass Scrap....11c
Low "....13c
Gilding....15c
Turnings, Filings and Chips half the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis 10 % ₩ ℔
Plain to No. 20 inclusive, above ¼ in. to 3 in....$0.38
" above 3 in.....48
Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.
Plain, ¼ inch.....65
" 3-16 "....1.05
" ⅛ "....1.55
All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing to No. 20.....45
English, Scotch and Extra Patterns Fancy Tubing to No. 20.....50
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cents ⅛ cent for each additional cutting under 2 feet.
All Mandrel Drawn Tubes under ⅜ in., 25 cents per pound advance.

ZINC TUBING.—net.
Plain.....22
Fancy.....28
Scotch and Extra Patterns.....31

GERMAN SILVER TUBING.—dis 10 %
4 Per cent.....75
6 ".....85
9 "....1.00
12 "....1.15
15 "....1.20
16 "....1.35
18 "....1.45
20 "....1.55

STEEL.—Duty: Bars, Ingots, Sheets and Coils, valued at 7 cents ₩ ℔., or under, 2¼ cents; over, 7 cents, and not above 11, 3 cents ₩ ℔; over 11, 3¼ cents ₩ ℔, and 10 % ad val. Railway Bars, 1¼ cents ₩ ℔. Railway Bars, in part Steel, 1 cent ₩ ℔. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.
Tool....15c
Spring....7c
Homogeneous....12½c
Boiler Plate....8c
Tire....5½c
Machinery (round and square)....9c
File....9c
Sheet....11 @ 16c
Saw Plate, mill and mulay....14 @ 16½c
" gang and X cut....13 @ 14c
" circular as to size....18 @ 30c

Chrome Steel.
Tool....₩ ℔ 14 @ 15c
Tool, extra fine....₩ ℔ 40 @ 75c
Spring....₩ ℔ 8 @ 9c
Machinery....₩ ℔ 8 @ 10c
Gun or Homogeneous....₩ ℔ 12 @ 16c

English Steel.—Payable in gold, net.
" Best Cast....₩ ℔ 15½c
" Extra Cast....₩ ℔ 16½c
" Round Machinery, Cast....₩ ℔ 10c
" Swaged, Cast....₩ ℔ 18c
" Best Double Shear....₩ ℔ 15½c
" Blister, 1st quality....₩ ℔ 13c
German Steel, Best....₩ ℔ 11c
" 2d quality....₩ ℔ 10c
" 3d quality....₩ ℔ 9c
Sheet Cast Steel, 1st quality....₩ ℔ 15½c
" " 2d quality....₩ ℔ 14½c
" " 3d quality....₩ ℔ 12½c

ANTIMONY....13 to 13½c

LEAD.—Duty: Pig $2 ₩ 100 ℔s; old Lead, 1½c ₩ ℔. Pipe and Sheet, 2⅜c ₩ ℔.
American....3¾ @ 4 c
Bar....5¾c, dis 10 %
Pipe....6c. dis 10 %
Tin Lined Pipe....15c, dis 10 %
Sheet....6½c, dis 10 %
Shot....Drop 7⅛ Buck, 8¼c, dis 10 %

BABBITT METAL.
N. P. U....₩ ℔ 6 @ 7c
A 20c; B, 16c; C, 12c; D, 10c ₩ ℔.

TIN.—Duty: Plates, Sheets, Tagger and Terne, 1.1c ₩ ℔; Electro-galvanized Plates, 2c ₩ ℔; Manufactures of, not enumerated, 35 per cent. ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent.
Banca....₩ ℔ 19 currency
Straits....₩ ℔ 15½ @ 16 currency
English....₩ ℔ 15½ @16 currency

TIN PLATES, CURRENCY PRICES
I C 10x14, 12x12, 14x20 } Prime Charcoal....$6.25 @ 6.50
I X 10x14, 12x12, 14x20 } Prime Charcoal....8.25 @ 8.50
D C 12½x17 "....5.75 @ 6.00
D X 12½x17 "....7.75 @ 8.00
For each additional X add....

COKE TIN PLATE.

	Best.	2d quality.	Ordinary.
I C 10x14, I C 12x12, I C 14x20	$6.00	5.75	5.00 @ 5.50

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$5.87½ @ 5.75	5.50 @ 5.62½	5.25 @ 5.50
I X 14x20	@ 8.00	....	....
I C 20x28	12.00 @ 12.25	11.50 @ 11.75	10.75 @ 11.00
I X 20x28	@ 10.00	....	....
I C 20x200	@ 19.00	...	....
I C 14x20 M. F. Brand			$7.25

SOLDER....No. 1, 9 @ 10½c; No. 2, 8½ @ 9c

SPELTER—Duty: In Pigs, Bars and Plates, $1 ₩ 100 ℔s.
American, cash....5¼ @ 5½c
Lehigh, on spot....10c

ZINC.—Duty: Pig or Block, $1.50 ₩ 100 ℔s. Sheet, 2½c ₩ ℔.
Sheet. Cask....6½c
" Open....6½ @ 7c

Paper Stock, Old Metals, &c

(Dealer's Selling Price.)
Canvas linen....4 @ 4½
" cotton, No. 1....4 @
" " No. 2....@ 2
White linen rags, No. 1....4¼ @
" " No. 2....2¾ @
Seconds....2 @
Mixed woolens....2½ @ 3¼
Soft woolens....9 @
Gunny bagging....3⅜ @
Jute Butts....3 @ 3½
Kentucky bagging....5 @ ¾
Waste paper and scraps....
Rope cuttings....1⅜ @ 3
Kentucky bale rope....4 @ 4½
Oakum junk, No. 1....5½ @ 5¾
" No. 2....@ 4
Grass rope....2⅜ @
Tarred shaking....2 @
White collar cuttings, all paper....7 @
" " " muslin lined....5 @
" " Envelope....7 @
Hard White Shavings, No. 1....4 @
Soft " " No. 1....3⅛ @
White Shavings, No. 2....3⅜ @
Mixed Shavings, part white....2⅜ @
Imperfections, No. 2, best folded sheets....4⅜ @
" No. 1, Heavy Stock....4⅜ @
Book Stock....@ 3¼
" " Heavy....3 @
" " Light....1⅛ @
Newspaper Stock....1⅜ @ 2
Prints....1⅛ @ 2
Pure Manilas....2⅜ @ 2⅞
Bogus Manilas and Hardwares....1 @
Commons....⅛ @
Binders' Board Cuttings....1 @ 1¼
Straw Board Cuttings....¾ @
Woolen Tailor Clips....1¾ @ 1¾
Satinet "....2 @ 2⅛

Old Metal.
Copper, heavy....15 @
Copper Bottoms....12½
Yellow Metal....13 @
Brass, light....8 @
" heavy....10 @
Heavy Composition....13 @
Old Lead, solid....@ 3
Tea Lead....@ 2¾
Zinc....@ 3¾
Pewter, No 1....10 @
" No. 2....8 @
Wrought Iron....per ton $17.00
Machinery Iron....per ton 11.00
Light Iron....per ton 10.00
Stove Plate....per ton 10.00
Grate Bars....per ton 4.00

Paints, Oils, &c.

Paints.
Black Lamp, Coach Painters....₩ ℔ 20c
" " Ordinary....6c
" Ivory Drop, fair....12 @ 15c
" " best....25c
Black Paint, in oil....kegs, 10 asst'd cans, 11c
Blue, Prussian, fair to best....40 @ 55c
" " " in oil....35 @ 55c
Blue Chinese dry....83c
" Ultramarine....18 @ 30c
Brown, Spanish....1½c
" Van Dyke....10@12c
Carmine, 40....combination price
Green, Chrome....15 @ 23c
" " in oil....14 @ 18 @ 25c
" Paris....good 25c; best, 30c
" " in oil....30c; " 45c
Iron Paint, Bright Red....₩ ℔ 2¼c
" Red....₩ ℔ 2c
" Brown....₩ ℔ 1½c
" Purple....₩ ℔ 3c
" Ground in Oil, Bright Red....₩ ℔ 5½c
" " " Red....₩ ℔ 5c
" " " Brown....₩ ℔ 4½c
" " " Purple....₩ ℔ 6c
Mineral Paints....1¼ @ 4c
Orange Mineral....12c
Red Lead, American....7½c
" " English....9½c gold
" Venetian (N. C.) dry....$1.70 @ $1.75
" " in oil....asst'd cans, 11c; kegs, 8c
" Indian dry....9 @ 12c
Rose Pink....10 @ 13c
Sienna, American, Raw....4c
" Burnt....4½c
" " in oil....10 @ 16 @ 20c
" Raw "....11 @ 15 @ 25c
Umber, Burnt....4 @ 8c
" " in oil....9 @ 12 @ 16c
" Raw....3⅛ @ 7½c
" " in oil....10 @ 16 @ 18c
Vermillion, Chinese....90c, gold
" English....60c, gold
" Trieste....1.10, gold
" American, Common....18c
White Lead, American. pure dry....8c
" " " in oil....8½c
White, Paris, English, prime....in bbls. 2 @ 2½c
Yellow Ochre, French....$1.75
" " " in oil....asst'd cans, 11c; kegs, 8c
" " Vermont....in casks 1½c
Yellow Chrome....17 @ 27c
" " in oil....14 @ 18 @ 25c
Zinc White, American No. 1, dry....8½c
" " No. 1, in oil....11c
" French (Paris)....11c
" " in oil....10½ @ 11½c

Oils.
Linseed, Raw, in casks and bbls....₩ gal. 57c @ 59c
" Boiled. " "....62c @ 64c
Whale, Crude....bbl. 45c @ 48c
" Bleached Winter....bbl. 57c @ 60c
" Unbleached....bbl. 53c @ 55c
Cotton Seed, Crude....bbl, 60c
" Southern Yellow....bbl, 55c
" White....bbl, 60c
Neatsfoot, Winter....70c @ $1.10
Natural Lubricating....36c @ 38c

Sundries.
Asphantum....9c
Benzine....₩ gal. 16c
Chalk....¾c
" Block....[illegible]
Dryer, Patent, Am'n....ass't cans, 10½c; keg, 9c
Frostings....[illegible]
Glue, White....33 @ 44c
" Sheet....20c
Glaziers' Points, Zinc....80
Gum, Copal....36c
" Damar....25c
" Shellac, English....30c
" " dark....25c
Litharge, English....9c gold
Pumice Stone, selected Lumps....4 @ 6c
" powdered....2¾c
Putty, in bladders....2¾c
" in bulk....2c
Rotten Stone, soft, English....8c
Spirits Turpentine....32c
Whiting Spanish....¾c

Glass.
FRENCH WINDOW GLASS.
Prices current per box of 50 feet.

Single Thick.—discount 60 %

SIZES.	1st.	2d.	3d.	4th
6 x 8 to 10 x 15	$7.50	$6.75	$6.25	$5.75
11 x 14 to 16 x 24	8.50	7.75	7.25	6.50
13 x 22 to 20 x 30	10.75	9.75	8.75	[illegible]
15 x 36 to 24 x 30	12.25	10.75	9.00	
26 x 28 to 24 x 36	13.00	11.50	9.75	
26 x 37 to 26 x 44	14.50	13.25	10.75	
26 x 46 to 30 x 50	15.00	14.00	11.25	
30 x 52 to 30 x 54	16.00	14.50	12.00	
30 x 56 to 34 x 56	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
36 x 60 to 40 x 60	20.75	18.75	17.25	

Double Thick.—Discount 60&10 %

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$12.00	$11.00	$10.00	$9.[illegible]
11 x 14 to 16 x 24	13.75	12.50	11.75	10.[illegible]
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 56 to 34 x 56	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

Sizes above 40 x 60—$10.00 per box extra for every five inches.
An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 81 united inches, will be charged in the 84 united inches brac[ket]

PRATT & CO.,
BUFFALO, N. Y., Manufacturers and Dealers in
Hardware, Iron & Nails,
Bolts, Nuts, Washers, Screws, &c.
THE FLETCHER POST HOLE AUGER.
The best, the cheapest, the most durable and the handiest Earth Auger in Market. Made from the best cast steel; will bore three holes while any other Auger is boring one, and is run with less power; works readily in clay, sand, gravel or muck soil, and will cut sharply through grass or root sods without the use of shovel or spade to start it.
Retail price, net, $3.50 each. To the trade, $3.00 each. Less 20 per cent.


TRADE SPECIALTIES.
Globe Horse Nails, Putnam Horse Nails, National Horse Nails, Buffalo Forged Horse Nails, Burden Horse Shoes, Walker Horse Shoes, Providence Horse Shoes, Toe Calks, Cast Steel, Bellows, Anvils and Vises, Ausable Horse Nails.
FRANCIS' AXES, full Assortment. *Special Brands—"KING OF THE FOREST," "ROYAL WOOD CHOPPER."*
Correspondence and orders solicited.

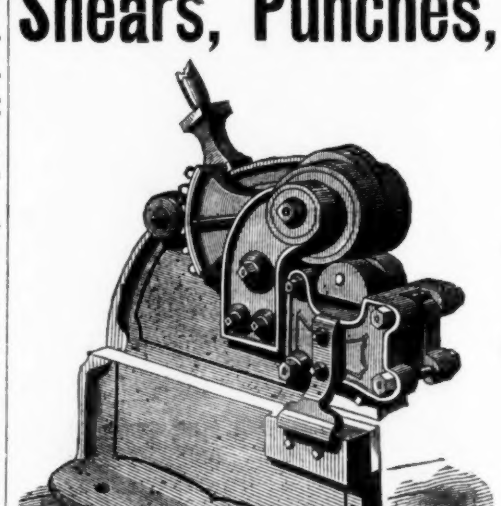
Lyon's Patent Hand & Power
Shears, Punches, Drills, Etc.


PLATE SHEARS,
No. 5 will cut 7-16 Iron through center of sheet.
Manufactured only by
G. B. Walbridge & Co
83 Reade St.,
NEW YORK.
E. E. SOUTHER & BRO.,
St. Louis, Mo.,
AGENTS.

"CHAMPION"
IMPROVED ICE CREAM FREEZER.

FOUR STYLES—15 SIZES.
GEARED FREEZERS.
No. 20.... 3 quart. | No. 24.... 10 quart.
No. 21.... 4 " | No. 25.... 12 "
No. 22.... 6 " | No. 26.... 16 "
No. 23.... 8 " | No. 27.... 20 "
FLY WHEEL FREEZERS.
No. 28.... 16 quart. | No. 30.... 32 quar[t]
No. 29.... 20 " | No. 31.... 40 "
FRAME FREEZERS.
No. 33.... 32 quart.
No. 34.... 40 "
DUPLEX FREEZERS.
No. 32.... Two 20 quart.
SOLE MANUFACTURERS,
Sidney Shepard & Co.
PROPRIETORS OF THE
BUFFALO STAMPING WORKS
Buffalo, N. Y.
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Represented by
PETER ROY, 89 Chambers St., N. Y.

McCAFFREY & BRO.,

PENNSYLVANIA FILE WORKS,

Fourth Street, north of Columbia Avenue, - - PHILADELPHIA.

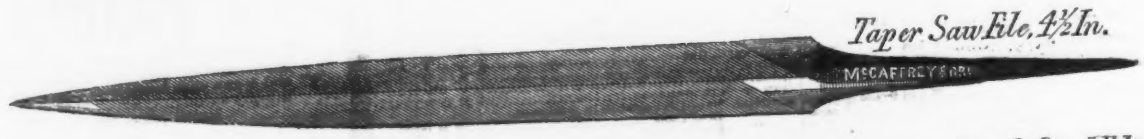
Trade Mark.

Awarded for Superior Goods.

Silver Medal.

Highest Premium.

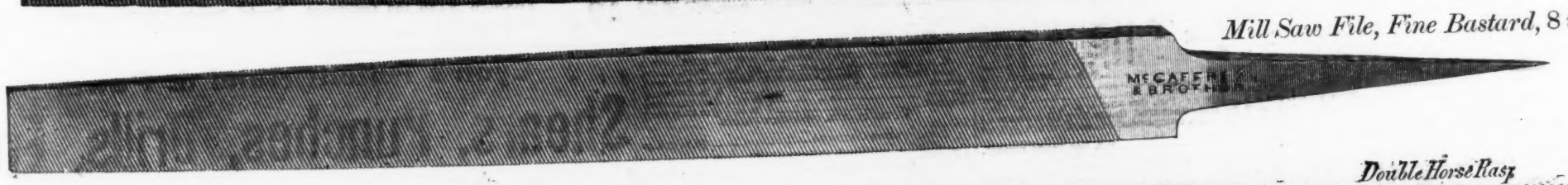
Taper Saw File, 4½ In.



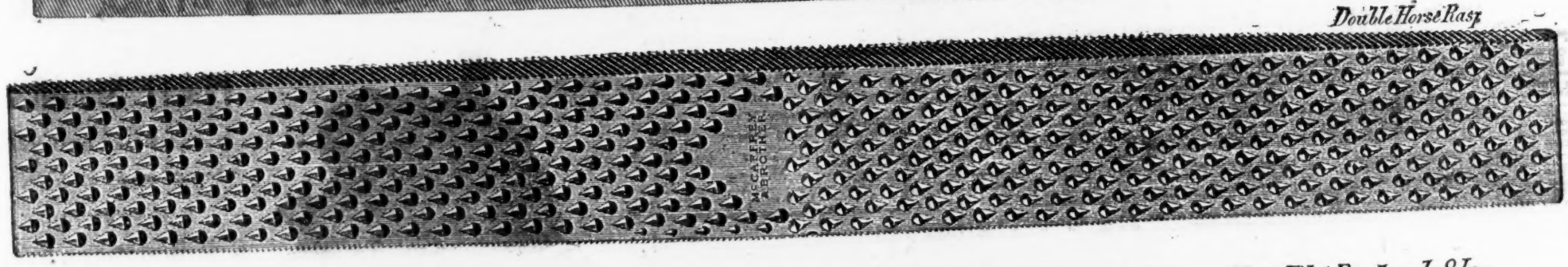
Band Saw File.

Round File, Bastard, 8 In.

Mill Saw File, Fine Bastard, 8 in.



Double Horse Rasp



Flat File, Bastard. 8 In.

Hand Bastard, 8 In.

Four-Square File, Bastard, 8 In.

We are practical mechanics, engaged exclusively in making Files and Rasps for over fifteen years, and have never lost a customer on account of quality. Our specialty in tempering enables our Files and Rasps to do more work than any other brand at present in the market. We solicit sample orders from foreign and domestic buyers who are desirous of handling a superior article. The Franklin Institute Medal was awarded us after a practical test with our competitors, and the United States Centennial Commission awarded us a Medal and Diploma for Superior Goods.

Gentlemen in any way connected with the trade who are visiting the Exhibition Universelle in Paris are invited to examine our exhibit, at **D 3**, American Section.

READING HARDWARE CO.'S CENTENNIAL MEDAL.

1876.

Awarded by the United States Commission to the Reading Hardware Co., at the Exposition held at Philadelphia, 1876,

As a certificate of merit, showing their great superiority as exhibitors of Apple Parers over all others on competition.

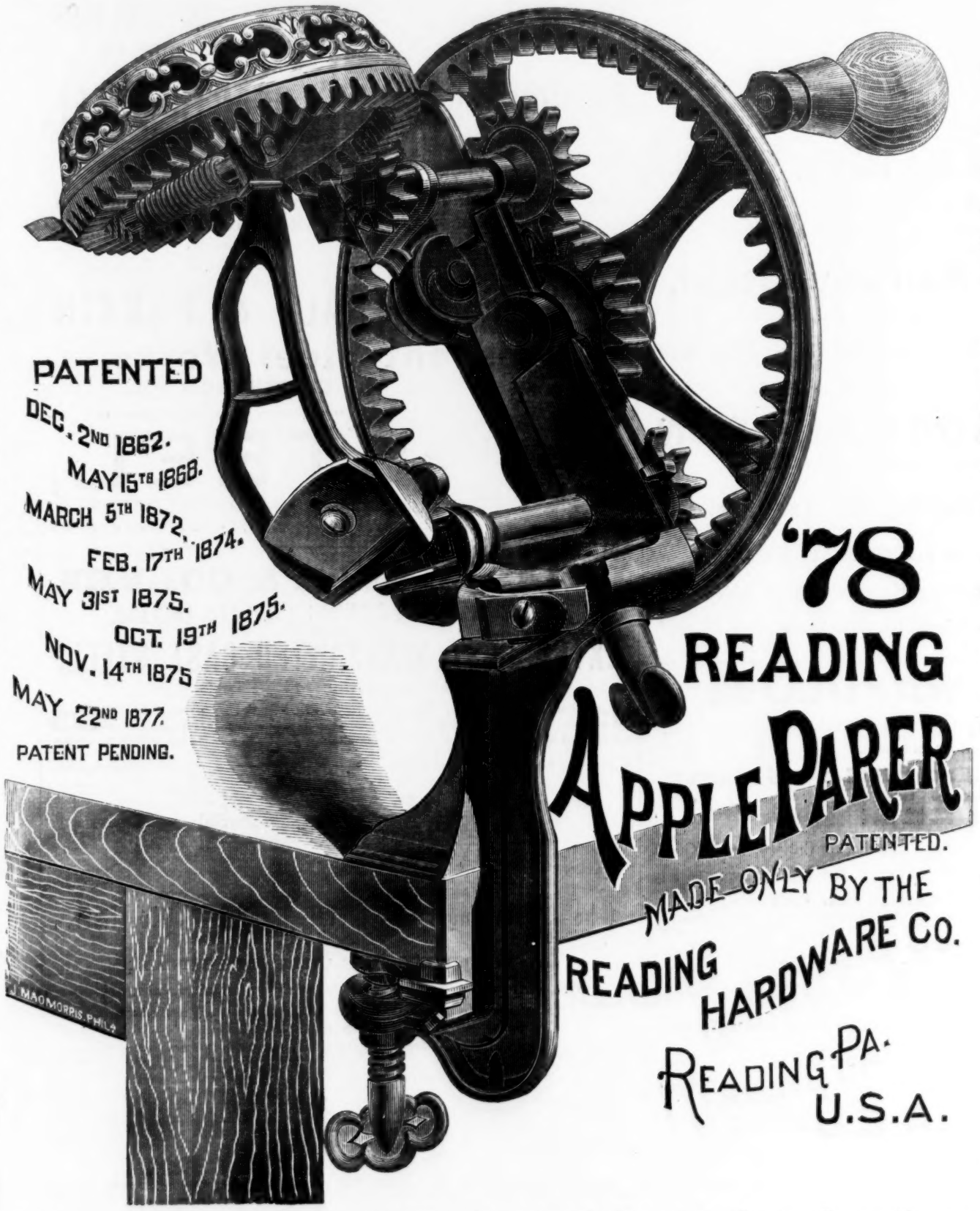
READING HARDWARE COMPANY'S NEW APPLE PARER.—1878.

We would call especial attention to the following advantages in construction.

1st. The curved shape of the extra knife enables it to completely remove all the parings from the base of the apple before the operation of the principal knife.

2d. In its attachment to either front, side or corner of the table, its oblique position places the apple completely in view, and the parings falling free avoids all clogging of the machinery.

3d. The small cog-wheels being attached to the body of the parer within the large crank wheel renders their action more direct, while the ratchet attachment prevents any reverse movement or injury by turning in the wrong direction.



4th. The clamps are made heavy and strong, with an additional plate which secures them more firmly in position and avoids injuring any article to which they are attached.

5th. The steady and uniform movement enables it to take off a very thin paring, while the direct action of the push-off removes the fruit without handling.

6th. The shafts being square cannot turn in the wheels of the machine, and each part has a separate number and can be easily supplied.

7th. Each machine s packed separately in a paper box, and one dozen boxes in a wooden case.

MANUFACTURERS OF

Rim and Mortise LOCKS, Latches, Knobs and Escutcheons.

Genuine Bronze, Brass, American Dark Bronze AND Japanned HARDWARE

We would especially recommend our new '78 Reading Apple Parer to the trade as the most reliable and best adapted to give complete satisfaction to the purchaser of any now in the market.

All orders will receive our prompt attention. For prices and terms, address

READING HARDWARE COMPANY, Reading, Pa., U. S. A.

Steel.

R. H. WOLFF & CO.,

IMPORTERS OF

IRON AND STEEL.

Sole Agents for the Sale of the Celebrated

Pr. HOMOGENEOUS DEC.' CAST STEEL, GUN BARRELS, MOULDS AND ORDNANCE.

Sole Agents for **COCKER BROTHERS,** Limited,

Successors to SAML. COCKER & SON, (ESTABLISHED 1752.)

SHEFFIELD, ENGLAND.

Sole manufacturers of

"(SC) **EXTRA" Cast Steel,**

AND

CAST STEEL WIRE for all purposes.

Sole Makers of

Cocker's "Meteor" Wire Plates.

Railroad Supplies and General Merchants.

Office and Warehouse, 46 Cliff Street, New York.

F. W. MOSS,

Successor to JOSHUA MOSS & GAMBLE BROS.

FRANKLIN WORKS, WADSLEY BRIDGE WORKS, WALKLEY WORKS, } SHEFFIELD, ENGLAND.

STEEL AND FILES.

Principal Depot, 80 John Street, New York.

MOSS & GAMBLE SUPERIOR C. S. "FULL WEIGHT" FILES,

Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises.

WARRANTED CAST STEEL, especially adapted for DIES and TURNING TOOLS, DRILLS, COLD CHISELS, PUNCHES and all kinds of MACHINISTS' TOOLS.
Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size.
Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.
English Spring and Plow Plate Steel.

Sheet Cast Steel Shear, German, Round Machinery, Hammer, Fork and Shovel Steel

GENERAL MERCHANT.

ALBANY & RENSSELAER IRON & STEEL CO.,

Troy, N. Y.,

Office in New York City, 56 BROADWAY.

MANUFACTURERS OF

Bessemer Railway Steel,

MERCHANT BARS, TIRE AND SHAFTING.

Railroad Iron, Pig Iron, Merchant and Ship Iron,

AGENCIES IN BOSTON AND PHILADELPHIA.

FRANCIS HOBSON & SON,

97 John Street, NEW YORK,

Sole Manufact'rs of "CHOICE" Extra Cast Steel.

Manufacturers of all Descriptions of Steel.

Manufacturers of Every Kind of Steel Wire.

Don Works, Sheffield, England.

CHAS. HUGILL, Agent.

S. & C. WARDLOW,

Sheffield, England,

Manufacturers of the Celebrated

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STEEL.

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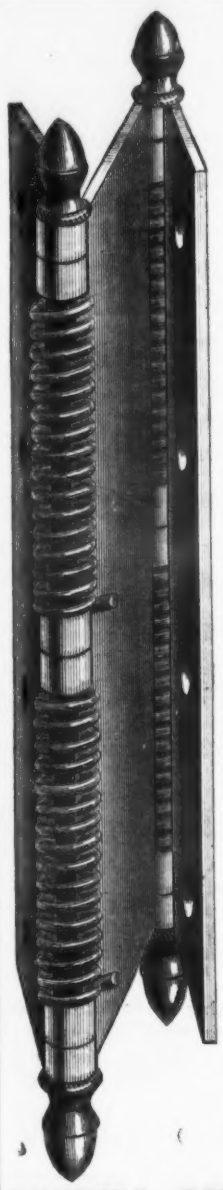

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3 "	4 50	6 50	6 75	8 75
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The 4½x4½ is Extra Heavy.

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To be used on Door 1 inch thick, or less.

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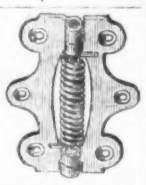

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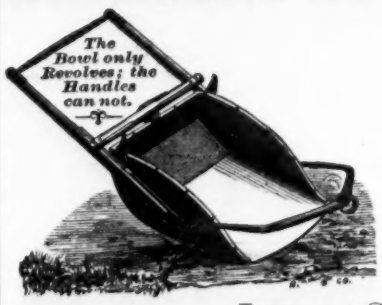

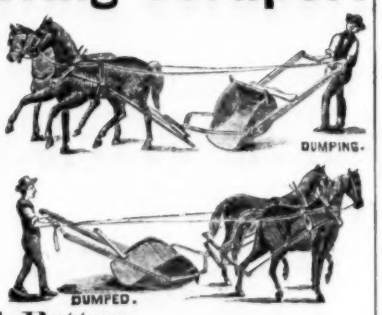

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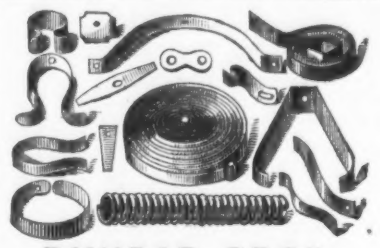

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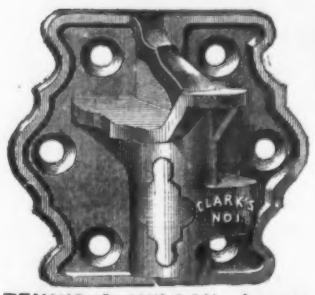

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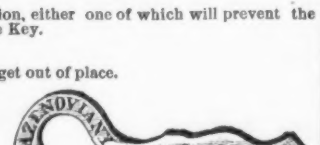

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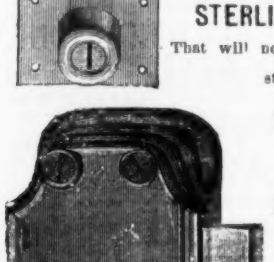

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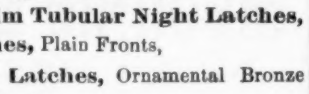

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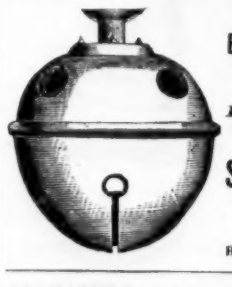

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Plymouth, Mass.

Manufacturers of Copper, Brass, and Iron Rivets: Common and Swedes Iron, Leathered, Carpet, Lace and Gimp Tacks; Finishing, Hungarian, Trunk Clout and Cigar Box Nails, &c. Rivets made to Order.

NEW YORK AGENCY

George C. Grundy,

HARDWARE.

165 Greenwich Street.

Agents for the Philadelphia Star Carriage and Tire Bolts

SAM'L G. B. COOK & CO.,

American and Foreign

Hardware and Cutlery Manufacturers' Agents,

Nos. 5 & 7 German St., - - BALTIMORE.

Represent and carry in stock a full line of the following manufacturers' goods, which we offer the **Trade** at manufacturers' prices and terms:

American Screw Co., Screws.
American Tea Tray Co.
American Machine Co., Crown Fluters, Wringers, etc.
Branford Lock Works.
Beardsley Scythe Co.
Bailey Tool Co., Defiance Iron Planes.
T. H. Bullock, Bellows.
Carr, Crawley & Devlin, Building, Cabinet and Saddlery Hardware.
Clark & Co., Patent Blind and Gate Hinges.
Cowles Hardware Co., House Furnishing and other Hardware.
Clark Bros. & Co., Carriage, Tire and other Bolts.
Connecticut Cutlery Co., Pocket Cutlery and Trimmers.
H. Chapin's Son, Rules, Levels, etc.
John Chatillon & Sons, Balances.
L. Coes & Co., Patent Screw Wrenches.
A. Field & Sons, Tacks, Nails, etc.
Forsythe Scale Works, Scales and Wrought Goods.
Hubbard, Bakewell & Co., Lippencott Axes and Shovels.
Iowa Farming Tool Co., Handled Hoes and Rakes, Snaths, etc.
Kimball Shovel Co., Solid Cast Steel Shovels and Spades.
Klein, Logan & Co., Picks, Mattocks, Grub Hoes, Fire Shovels, etc.
Henry W. Kip, C. S. Hammers.
Lancaster Bolt Co., Eagle Carriage and Tire Bolts.
Lamson & Goodnow Mfg. Co., Table Cutlery, Butcher Knives, etc.
Meriden Britannia Co., Plated Ware and Britannia Spoons.
W. T. & J. Mersereau, Stair Rods, etc.
Wm. McNeice, Saws.
Nicholson File Co.,
Saranac and International Horse Nails.
Northwestern Horse Nail Co.
Peck Bros. & Co., Brass Cocks.
A. G. Patton, Enameled and Tinned Hollow Ware.
Rogers Bros., "A1 1847" Plated Spoons. Forks, etc.
Roy & Co., Strap and T and Hook and Eye Hinges, Wrought Butts, Nuts, Washers, etc.
James R. Torrey's Razors and Straps.
U. S. Lock Co., Shepherdston's Patent Locks.
O. B. Wilson, Cow Bells.

And other manufacturers, making our assortment of

Builders', Cabinet, Agricultural and House Furnishing Hardware & Cutlery.

As complete as can be found in any house. Also full stock of

Wostenholm's, Rodgers', Field & Co., Continental and German Cutlery, W. & S. Butcher's Razors, Edge Tools and Files.

Full line of

REVOLVERS AND CARTRIDGES.

And a general assortment of

SHELF AND HEAVY HARDWARE.

Orders filled promptly from stock.

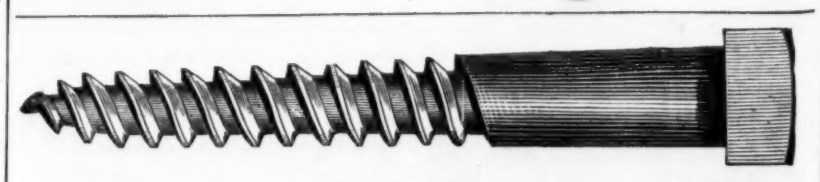
☞ Consignments of desirable goods solicited.

WILLIAM A. IVES & CO.,

New Haven, Conn.

Ives' Expansive Hollow Augers.

Ives, Novelty Hollow Augers.



WM. H. HASKELL & CO.

Pawtucket, R. I.,

MANUFACTURERS OF

COACH SCREWS

(With Gimlet Points),

ALL KINDS OF

Machine and Plow Bolts,

FORGED SET SCREWS,

AND

TAP BOLTS.

HENRY B. NEWHALL 11 WARREN ST. N NEW YORK AGENT

PHILADELPHIA.

(Corrected weekly by Lloyd, Supplee & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.
Peter Wright's, ₱ ℔, gold.....10¼c
over 250 lbs.....11c. gold, net
Wilkinson's, ₱ ℔, gold.....11c. net
Eagle (American).....9 cents per lb—dis 20%

Apple Parers.—
Reading No. 72.....per doz $ 5 50 net
" " 75....." 6 25 net
" " 76....." 7 00 net
" " 77....." 7 50 net
Peach Parers....." 10 00 net
Little Favorite, corer and slicer....." 7 50 net
Lots of 10 to 25 dozen special price.

Axes.—
Mann's Red Warrior.....Per doz. $8 50 @ 9 00 net
Red Indian....." 8 50 @ 9 00 net
Red Chieftain, bevelled....." 9 00 @ 10 00 net
Crown Prince....." 9 50 @ 10 50 net

Augers and Auger Bits.—
Bates' Nut Augers.....dis 40&10 @ 50%
Cook's Augers.....dis 50 @ 5 0&5 %
Watrous Shap Augers.....dis 15%
Benjamin Pierce Auger Bitts.....dis 40%
Griswold Auger Bits.....dis 40&10 @ 50%
Cook's " " .....dis 50 @ 50&5 %
Jennings' " " .....dis 10&10%
Sconney's Pat. Hol. Augers, list $48 ₱ doz...dis 25&10%
Stearns' Pat. Hol. Augers " $48 " ...dis 25&10%

Balances.—
Light and "Common".....dis 25&10%
All other Spring Balances.....dis 25%

Bells.—
Bevin Bros. Mfg Co. Light Hand Bells.....dis 70 @ 75%
Swiss Pattern Hand Bells.....dis 50 @ 5 0&10%
Connell's Door Bells.....dis 50 @ 50&10%
Gt. Western & Kentucky Cow, new list.....dis 50%

Bolt and Rivet Clippers.
Chambers' No 1, for ⅝ boltt, each ...$ 7 50)
" 2, " ½ " ... 9 00) dis. 25%
" 3, " ⅜ " ... 12 00)

Boring Machines.—
Upright, with Augers.....List $9 00 dis 40&10%
" without Augers....." 5 50 dis 40&10%
Angular, with Augers....." 11 00 dis 40&10%
" without Augers....." 7 00 dis 40&10%

Bolts.—Eastern Carriage Bolts.....dis 75&3 %—cash
Philadelphia " .....dis 60&10 @ 60&20%
Stanley, Wrought Shutter.....dis 50%

Braces.—Barber's.....dis 40&5%
Rackus.....dis 50 @ 50&10%
Spofford.....dis 50%
American Ball.....dis 25&10%

Butts.—Cast Fast Joint, Narrow.....dis 60&10%
" " Broad.....dis 65&10%
Cast Loose Joint, Narrow.....dis 70&10%
" " " Broad.....70&10%
" Acorn, Loose Pin.....dis 65&10%
" Acorn " Jap'd.....dis 67½&10%
Mayer's Loose Joint.....dis 70&10%
Wrought Loose Pin.....dis 40&10%
" Table Hinges and Back Flaps.....dis 55&10%
" Narrow, Fast.....dis 40&10%
" Loose Joint.....dis 40&10%

Wind Butts.
Parker.....dis 60 @ 60&10%
Clark.....dis 60%
Shepard.....dis 60%
Lull & Porter.....dis 66⅔&10%
Hafer's.....dis 33⅓ @ 33⅓&10%

Chains.—German Halter and Coil.....dis 30&5% gold
Galvanized Pump.....₱ ℔ 10½c net

Cast Cutters.—Dixon's.....dis 25 @ 30%
Woodruff.....dis 25 @ 30%
Stowe.....dis 25 @ 30%
Dale's.....new list, dis 50&2½%
American.....dis 25%
Snyders.....dis 25 @ 30%
Enterprise Stuffers.....dis 30%
Planers.—Sandusky.....dis 35%
Ogontz.....dis 30&10%
Bailey.....dis 25&10%

Plane Irons.—Sandusky.....dis 10&10%
Butcher's.....gold £, $5 50

Plumbs and Levels.
Stanley's Adjustable.....dis 60&10%
" Non-Adjustable.....dis 60&10%
Picks.—Philadelphia.....dis 20%
Plant's.....dis 25%
Pumps.—Bickford.....$7.00, dis 20&10%
Rules.—Stanley Boxwood.....dis 60&10%
Stanley Ivory.....dis 50&10%

Screwdrivers.—Hart's Pattern.....dis 60&10%
₱ doz.....$14 50 17 75 21 00 26 50 31 00 35 50
Lbs.....50 100 150 200 250 300
American Pattern.....dis 25 @ 25&10%
₱ doz.....$5 50 7 00 9 00 10 00 11 00 12 00
Lbs.....50 100 150 200 250 300
English Pattern.....dis 25 @ 25%
₱ doz.....$7 00 9 67 10 67 12 67 14 67 16 67
Lbs.....50 100 150 200 250 300

Squares.—
Steel and Iron.....dis 50%; full case, dis 50&10%
Try Squares, Stanley.....dis 45&10%
Disston's Try Squares.....dis 45%

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.....₱ doz. $9 00 net
Clipper No. 10, Bronzed Blade Boxed and Sharpened.....₱ doz. $8 50 net
Clipper No. 5, Painted Red, Boxed and Sharpened.....₱ doz $8 25 net
Saws.—Disston's Hand, Panel and Rip.....dis 20%
Disston's Circular.....dis 30%
" Cross-Cut No. 2, Pisin Tooth..₱ ft., 45c net
" " Patent Tooth.....₱ ft., 45c. net
" " Champion Tooth....₱ ft., 35c. net

Shovels and Spades.
Rowland.....dis 50&5%
Silver Ames & Sons, new list.....dis 30%
Spring Irons.—4 to 10 lbs.....₱ ℔.. 2½ @ 2¾c
Mrs. Potts' Patent.....dis 30 @ 40%

Stone.—Arkansas Oil Stone.....₱ ℔ $2 00 net
Washita Extra....." 30c net
" No. 1....." 25c net
" " 2....." 6 c net
" Slips....." 25c net
" Axe....." 16½c net
Turkey Oil Stone No. 1....." 16c net
" " " 2....." 25c net
" Axe Stone....." 45c net
Hindostan Oil Stone No.....₱ ℔ 4 @ 4½c net
" Axe Stone....." 5 @ 5½c net

Screws.
Flat Head iron.....d a 55%
" " Brass.....dis 50%
Round Head Brass.....dis 35%
" " Iron.....dis 45%

Spoons.—
Plated.....dis 40 @ 40&5%
German Silver.....dis 30&5%
Britannia, Boardmans.....dis 50&10%
" Parkers.....dis 50&10%
Tinned.....dis 15 @ 20%
" by case.....dis 20%

Springs.—Torrey.....₱ doz $2 00 @ 2 10 net
Philadelphia.....5 in., $5 00; 8 in., $7 00 ₱ doz, dis 25%

Chatfield.....No. ', $3 50; 2, $4 00; 3, $6 00 ₱ doz. net
Gem Coil No. 1, Large Jap'd.....₱ doz ($3 50)
" " No. 2, Medium Jap'd....." 2 50 (dis
" " No. 3, Small " ....." 2 00)

Stocks and Dies.....dis 10&5%

Stove Polish.—Gem.....₱ gross, $4 50, dis 5%
Dixon.....$6 00, dis 5%
Onyx.....$4 00 @ 4 25 net

Tacks, Brads, &c.
Tacks, Half Weight American.....dis 75%
" Full " .....dis 50%
" Half " Swedes.....dis 65%
" Full " " .....dis 30%
" Carpet, Am. and Swedes.....dis 20%
" " Leather Head.....net
" Copper.....₱ ℔ 58c., net
Brads, Half Weight.....dis 50%
Shoe Nails—
4-8 and larger, 9c; 3½-8, 9½c ₱ ℔, dis 20&10%
Trunk, Clout and Finishing Nails—
⅜ ⅝ ½ ⅝ ¾ 1 1¼ and over
15, 14, 13, 12½, 11, 10, 11c ₱ ℔, dis 20&10%
Double Pointed Tacks.....dis 40&5%

Traps.
Genuine Oneidas—Newhouse.....dis 30%
Im. Oneida—Newhouse list (1st qual.).....dis 60%

Vises.—Solid Box, Trenton.....₱ ℔ 11½ @ 12½c net

Wrenches.—
Girard (Coe's Pattern).....dis 50&10%, case 50, 10&5%
Agricultural—
₱ doz 10 in., $3 60; 12 in., $5 40 net; case dis 5%
Coes' Genuine.....dis 50&10%
" Pat. Wrot Bar.....dis 60&10%
" " Mail " .....dis 75&10%
Taft's " Wrot " .....dis 75 @ 75&10%
Phila. Tool Co., Duplex.....dis 30%

Wire.—
Bright or Ann'd, No. 0 to 18.....dis 87½ @ 90%
" " No. 19 to 26.....dis 60 @ 62½%
" " No. 27 to 36.....dis 62½ @ 65%
Coppered 0 to 18.....dis 52½ @ 55%
Tinned Broom Wire.....dis 45 @ 47½%
Galvanized, No. 7 to 18.....Market list, dis 30 @ 35%

Wringers.—Novelty No. 10.....₱ doz. $60 00 net
Novelty No. 2....." 63 00 net
Universal, No. 2½....." 60 00 net
" No 3....." 68 00 net

PITTSBURGH.

Merchant Iron.

Flat Bar.

1½ to 4x¼ to 1 in.....1.80c
4¼ to 6x¼ to 1 in.....1.90c
1¾ to 6x1½ to 1¾ in...2.20c
1¼ and 1¾x¾ to ⅞ in.1.90c
1 and 1¼x¾ to ⅞ in... 2c
⅝, ¾ and ⅞x¾ to ⅝ in.2.20c

Rounds and Squares.

1 to 1¾ in.....1.80c
2 to 2⅝ in..... 2c
2¾ to 3¼ in.....2.30c
3⅜ to 4 in.....2.80c
⅝ to ⅞ in.....1.90c
⅝ to 9-16 in..... 2c
½ to 7-16 in.....2.20c
⅜ in.....2.40c
5-16 in.....2.60c
¼ in.....2.80c
3-16 in.....4.80c

Horse Shoe Bar—all sizes.....2.80c

Heavy Bands.

3½ to 6x1¼ and 5-16 in. 2c
1½ to 3¼x1¼ & 5-16 in. 2c
1 to 1¾x1¼ and 5-16...2.10c
¾ to ⅞x1¼ and 5-16...2.30c
⅝ & ½x1¼ and 5-16...2.80c

Light Bands.

3 to 6x1½ to 3-16 in.....2.10c
1½ to 2¾x1½ to 3-16 in..2.30c
Same sizes X No. 11 and No. 12 2-10c. extra.
1 to 1¾x1¼ to 3-16.....2.50c
¾ and ⅞x1¼ to 3-16 in..2.80c
⅝ and ½x1¼ to 3-16 in..3.30c

Hoop Iron.

⅝ & 9-16, Nos. 13 to 16..4.50c
¾ & 11-16, Nos. 13 to 16.. 4c
⅞ & 13-16, Nos. 13 to 16..3.50c
1 & 1¼, Nos. 13 to 15..3.10c
1¼ to 2, Nos. 13 to 15..2.70c
⅝ & 9-16, Nos. 17 to 20..4.80c
¾ & 11-16, Nos. 17 to 20..4.30c
⅞ & 13-16, Nos. 17 to 20..3.80c
1 and 1¼, Nos. 16 to 19..3.40c
1¼ to 2, Nos. 16 to 18..2.60c
2¼ to 3½, Nos. 13 to 15..2.80c
The prices under Hoop Iron do not apply to Cotton Ties.
1-10c ₱ ℔ extra for each gauge lighter.

Oval Iron.

⅞ to 1¼ in.....2.20c
⅝ to ¾ in.....2.40c
⅛ in.....2.60c
⅜ in.....3c

Half Oval & Half Round

⅞ to 1¼ in.....2.50c
⅝ to ¾ in..... 3c
¼ in.....3.30c
⅜ in.....4.80c
W'g'n Box Iron, ¾&⅞..3.30c

Sheet Iron.

	Com'n.	Charc'l
No. 10 to 14	2.60c	4.10c
No. 15 to 17	2.80c	4.30c
No. 18 to 21	3.10c	4.60c
No. 22 to 24	3.30c	4.80c
No. 25 & 26	3.50c	
No. 27	3.70c	5.30c
No. 28	4.10c	5.60c

All Sheets, No. 18 and lighter, over 30 in. wide, not less than 2-10c. extra.

Wood's Patent Planished Sheet.

1st quality (A).....10½c | 2d quality (B).....9½c

Plate Iron—3-16 to ¼ in. thick.....2.60c

Galvanized Iron-Juniata.

Nos. 14 to 20	12c	No. 27	15c
Nos. 21 to 24	13c	No. 28	16c
Nos. 25 and 26	14c	No. 29	18c

Common and imperfect Juniata, 45 to 50% off. Discount, 30 to 40%.

Roofing Iron, Corrugated or Crimped.

Galvanized Common.		Black.	
No. 20	7c, net cash	No. 20	4c
No. 21 to 24	7½&8c, "	Nos. 21 to 24	4¼c

Bridge Iron.

Carnegie Bros. & Co.'s list.

Beams and Channels.

Solid Wrought Iron Beams, 3 to 10¼ in. x 30 ft..₱ ℔ 3 c
" " " " 12 in. by 25 ft..." 3
" " " " 15 in. by 25 ft..." 3¼c
Deck Beams, 7 to 9 in. by 30 ft....." 3 c
Channel Bars, 1¼ to 10 in. by 30 ft....." 3 c
" " 12 in by 30 ft....." 3¼c

Tee Iron.

1 in. x 1 in. to 5 in. x 3 in.....₱ ℔ 2.90c

Angle Iron.

Equal Sided, 1x1 to 1¾x1¾ in.....₱ ℔ 2.70c
" 2x2 to 4x4....." 2.60c
Unequal Sided, 2x1¾ to 5x4....." 2.60c
Square Root Angles, 2x2 to 3½x3½....." 2.60c
Star Iron, 1¼x1¼ to 4x4....." 2.70c
Sash Iron, 1¼x7-8x3-16....." 3.25c
Miscellaneous Shapes, various shapes...₱ ℔, 2.6 to 3.5c

Nails.

Fence and Brads.

4d to 6d	$2.50	4d and 5d	$3.25
8d and 9d	2.75	3d	4.00
6d and 7d	3.00	2d	5.25

Barrel.

¾ in.	6.50	1¼ in.	4.25
⅞ "	5.50	1⅜ "	4.00
1 "	5.00	1½ "	3.25

Lining.

¼ in.	7.00	⅝ in.	8.50
Tobacco Hhd.		8d	3.25
10d	3.00	6d and 7d	3.50
Clinch—All sizes			4.25

Slating.

5d	3.50	3d	4.25
4d	3.50	2d	5.50
Finishing.		1¾ to 1⅝ in.	4.50
1 in.	7.50	2 in.	4.25
1¼ "	6.50	2½ "	4.00
1⅜ "	4.75	3 " and over	3.75
Casing and Box.		6d	3.75
10d to 30d	3.25	4d	4.00
8d	3.50	3d	5.00
Fine Blued.		3d	5.50
4d	4.25	2d	6.25
Cut Spikes—All sizes			2.75
Boat Spikes—All sizes			3.25

Each half keg 10 cents extra.

TERMS.—Note or acceptance at 60 days; or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice. An abatement of 10 cents per keg allowed upon orders of 200 kegs or over.

Steel.

Square, Flat and Octagon Tool Steel.

⅜ to 2 in	13c	7-32 and 4¼ 5 in	16c
5-16 and 2¼ to 3 in	14c	3-16 and 5¼ to 6 in	19c
¼ and 3¼ to 4 in	15c	5-32 in	24c

Single and Double Shear Nailers—Same as Tool.
Knife, Tap, Die, Mill Pick, Drill—Ordinary sizes.....13c

Machinery Steel—Round.

⅜ to 2 in	7½c	7-32 and 4¼ to 5 in	10½c
5-16 and 2¼ to 3 in	8½c	3-16 and 5¼ to 6 in	13½c
¼ and 3¼ to 4 in	9½c	5-32 in	18½c
Cast Spring Steel.		1⅝ to 3x5-32 to 3-16 in..	7½c
1 to 4x¼ to ⅝ in	6½c	⅛ to 1¾x5-32 to 3-16 in..	8½c

Agricultural Steels.

Solid Cast Steel Plow, 4 to 16 by 3-16 to ⅜ in.....7c
" Iron Center Plow," 4 to 16x3-16 to ⅜ in.....8c
" Iron Back Plow," 4 to 16x3-16 to ⅜ in.....8½c
Soft Steel Center Plow, 4 to 16x3-16 to ⅜ in.....9c
Landside and Cultivator, C. S., ⅜ in. thick.....9½c
Circular Plow Coulters, 5-32 to ¼ in. thick.....11c
Reaper and Scythe.....13c
Fork and Hoe.....7c
Horse Rake Teeth, to length.....8c
Finger Bar.....8½c
Cutter Bars, C. S.....8½c
" German Spring Steel.....7½c
Cornstalk Cutter beveled to length.....8c
Planters' Hoe, C. S.....9c
Hoe, C. S.....7½c

Sheet Steels.

German, 10 to 16 g	8c	Common C'st, 17 to 20 g.	10c
" 17 to 20 g	11c	Best Cast, 10 to 16 g	13c
Common C'st, 10 to 16 g.	9c	" " 17 to 20 g	14c

Rolls and Castings.

Furnace, Floor and Straightening Plates.....1¾ @ 2c
Housings and Castings not otherwise specified....2½c
Guide Plates.....3 c
Spindles and coupling boxes.....2 @ 2½c
Sand Rolls and Pinions, large size.....2½c
" " small size.....3 c
Pipe Mill Castings.....4 c
Rolling Mill Castings under 50 lbs.....4 c
Spur and Bevel Wheels, large.....3 @ 3½c
" " small.....4 @ 4½c
Pulleys up to 30 inches.....4 c
" over 30 inches.....3¼ @ 3½c
Engine Castings, light.....3¾c
" " heavy.....3½c

Chilled Rolls.

6 to 7 in. diam., 7 to 20 in. long.....6 c
8 to 15 in. " 8 to 40 in. " .....5 c
15 to 24 in. " 15 to 72 in. " .....4 c
24 to 31 in. " 72 to 108 in. " 4½c

Heavy Hardware.

Bolts, Screws, Nuts, etc.

Lewis, Oliver & Phillips, discount off Standard List.
Carriage & Tire Bolts, ordinary orders 75, & 3% off net
Stove Bolts.....40&5% off net
Elevator Bolts.....30% off net
Machine and Square Head Bolts.....60&10% off net
Coach and Lag Screws.....60&10% off net
Bolt Ends.....60&10% off net

Pat. Hot Pressed Sq. and Hex. Nuts.....8c ₱ ℔ off net
Washers, all made from new band iron..8c ₱ ℔ off net
Nuts and Washers in 25 ℔ boxes, ½c ₱ ℔ ex. Nuts and Washers in lots less than one keg each size, ½c ₱ ℔ ex. Nuts and Washers in 5 ℔ boxes, 1c ₱ ℔ ex.
Strap and T Hinges.....60&12½% off net
Harrow Teeth.....net
Skein Bolts.....net
Cast Iron Washers.....3½c ₱ ℔ net
Fire Shovels and Pokers.....50% off

Wagon Hardware.

Single Trees, Neck Yokes and Double Trees, made from best selected hickory, and ironed complete, in the most approved patterns.
No. 1 Southern Plow Single Tree, Ironed complete, Irons all Wrought.....each, 25c net
No. 2 Western Plow Single Tree, Ironed complete, Irons all Wrought.....each, 35c net
No. 3 Wagon Single Tree, Iron complete, Irons all Wrought, except Malleable Ferrule.....each, 50c net
No. 4 Wagon Single Tree, Ironed complete, Irons all Wrought; Improved End Pieces riveted on; one side acts as a wear iron for wheel to rub against.....each, 50c net
Neck Yoke, Ironed complete, Irons all Wrought except End Ferrules, with Wt. Iron Rings.....each, 60c net
Southern Plow Double Tree, Ironed complete, Irons all Wrought.....each, 50c net
Wagon Box Strap Bolts—
For orders of 100 Set, 45&10% dis.

10 in. long by	7-16	at Screw End, ₱ set of	8	bolts..	45c
12 in. "	½	" "	8	" ..	55c
10 in. "	9-16	" "	8	" ..	65c
12 in. "	9-16	" "	8	" ..	70c
14 in. "	9-16	" "	8	" ..	80c
10 in. "	⅝	" "	8	" ..	80c
12 in. "	⅝	" "	8	" ..	80c
14 in. "	⅝	" "	8	" ..	90c
16 in. "	⅝	" "	8	" ..	1.00
18 in. "	⅝	" "	8	" ..	1.10
20 in. "	⅝	" "	8	" ..	1.20

50 ₱ set for each additional inch over 14 inches. All lengths made.

Chains, Straight or Twist Link.

Reiter & Morton's List.

5-16	7c	½	5¾c
⅜	6c	9-16	5¼c
7-16	6c	⅝	5c

Net cash, 30 days.

Horse Shoes, Etc.—In 100 keg lots.

Juniata Horse Shoes.....per keg, $3.25
" Mule " " 4.25
Steel Toe Calks.....per 7½c lb.
Thistlewood & Co.'s Self-Sharpening Horse Shoes.....per keg, $5.25
Thistlewood & Co.'s Self-Sharpening Snow Shoes.....5.50
Toe Calks.....per lb. 8c

White and Red Lead.

Assorted Kegs (all sizes).....8c
25 ℔ Tin Pails, 100 ℔ Cases.....8½c
12½ ℔ Tin " 9c
Red Lead.....in kegs, 7¾c; in barrels, 7½c.
Orange Mineral.....10c; " 9¾c.
Litharge.....7¾c; " 7½c.
Dry White Lead.....7¾c; " 7½c.

Window Glass.

Per Box of 50 Feet.—Discount 70 % @ 70&10%.

Single Strength.

Size.	AA.	A.	B.	C
6 x 8 to 10 x 15	$7.50	$6.75	$6.25	$5.7
11 x 14 to 16 x 24	8.50	7.75	7.25	6.5
18 x 22 to 20 x 30	10.75	9.75	8.75	7.7
15 x 36 to 24 x 30	12.25	10.75	9.00	
26 x 28 to 24 x 36	13.00	11.50	9.75	
26 x 36 to 26 x 44	14.50	13.25	10.75	
26 x 46 to 30 x 50	15.00	14.00	11.25	
30 x 52 to 30 x 54				
32 x 56 to 34 x 56				
34 x 58 to 34 x 60				
36 x 60 to 40 x 60				
Double Strength.				
6 x 8 to 10 x 15	12.00	11.00	10.00	28
11 x 14 to 16 x 24	13.75	12.50	11.75	10.50
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 56 to 34 x 56	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 84 united inches bracket.

CHICAGO.

(The Chicago Stamping Co., 10, 12 & 14 Lake St.)
May 23, 1878.

Tin Plate.—

10x14, IC, Ch'l. Good.$		14x20, IXX, Ch' Best.	11 50
10x14, IC, " Best,	6 50	14x20, IXXX, " " .	14 00
10x14 IX, " " .	9 00	DC, 100 Plate " " .	6 50
12x12, IC, " " .	6 50	DX, " " .	9 00
12x12, IX, " " .	9 00	DXX, " " .	11 50
14x28 IC, " " .	6 50	DXXX, " " .	14 00
14x20, IX, " " .	9 00	IC, Roofing, " " .	6 00
20x28, IC, "		IX, " " .	8 50
20x28, IX, "		Best	13 00
10x14, IC, Coke Plates		"	18 50
14x20, IC, "		"	17 50
10x20, IC, "		"	6 00
		"	9 50

Block Tin —
Large Pigs.....18c | Bars.....20c
Small.....19c

Zinc.—Sheet, 500 to 1000 ℔. Casks.....6½c
Loose Sheets.....7 c
Slab Zinc or Spelter.....6 c

Copper.—Bottoms.....28c
Sheathing.....26c
Planished.....31c
" Boiler lengths.....36c
Bolt.....28c

Braziers' Sheets.—
30x60, 6 to 7 lbs... ₱ ℔ 34c | 30x60, 10 to 12 lbs... ₱ ℔ 30c
30x60, 8 to 9 lbs. " 32c | 30x60, 15 to 100 lbs. " 28c

Spelter.—F. S. & Co.'s make
Best Fine.....15c
No. 1.....14c
Roofing.....12c
Braziers or Spelter Solder.....28c

Antimony.....16c

Babbit Metal—F. S. & Co.'s.....12c
No. 2.....10c

Sheet Iron.—

	Common.	Smooth Com.	Smooth Charcoal.	Smooth Juniata
No. 24	3·00c	3 80c	5½c	8 c
25 & 26	3·20c	4·00c	6 c	8½c
27	3·40 c	4·20c	6¼c	8½c

Galvanized Iron.—dis 40%

No. 16 to 20	12c	No. 27	15c
21 to 24	13c	28	16c
25 & 26	14c		

Russia Iron.—
Perfect.....12c | No. 1 Stained.....11c
In Sheets, 1c. higher.

American Russia.—
A.....10½c | B.....9½c
In sheets, 1c higher

Lead.—
Pig.....5 c | Lead Pipe, in full coils 5¾
Bar.....6 c | Lead Pipe, when cut.. 6
Sheet Lead.....6¾

Wire—bright.....dis 50%
Coppered.....dis 45%

D. W. Hazelton & Co.,

724 Girard Ave., PHILADELPHIA, PA.,

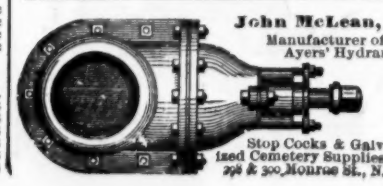
MANUFACTURERS OF

CURRY COMBS,

PATENT

Adjustable Lock Elbows for Stove, Heater and Conductor Pipes.

Flat and Rimmed Wash Boiler Covers.
Stamped Ware and Wood Frame Graters.
Pat. Metallic Wash Boiler and Kettle Bottoms.
Stamped and Press Work to order.
Correspondence solicited.



John McLean,
Manufacturer of Ayers' Hydrants
Stop Cocks & Galvanized Cemetery Supplies
298 & 300 Monroe St., N. Y.

Having removed our Factory to 622 to 642 East 14th Street, New York, we offer our old premises

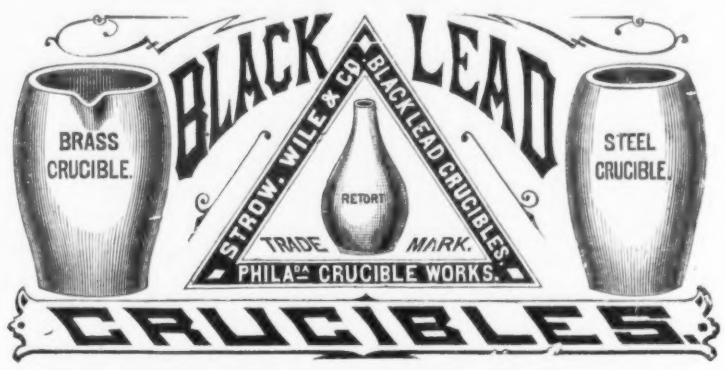
To Rent.

FOUNDRY AND MANUFACTORY.

conveniently located foot South 9th Street, E. R., and No. 74 to 85 First Street, Brooklyn, E. D., within one block of ferries to Grand and Roosevelt streets, New York.

Guy C. Hotchkiss, Field & Co.

622 to 642 East 14th St., New York.



FOR MELTING ALL KINDS OF METALS,

And Manufacturers of

Sunny Side Stove Polish.

Lumber Pencils, Foundry Facings and Lubricating Plumbago.

WILE, SIEDEL & CO.,

Nos. 1324, 1326, 1328, 1330, 1332 & 1334 Callowhill St., Phila.

GENERAL AGENTS:

Messrs. HALL & CARPENTER, 709 Market St., Phila.

WM. F. FOREPAUGH, JR. & BROS.

Manufacturers of SUPERIOR OAK TANNED

LEATHER BELTING.

Best Quality Lace and Strap Leather on Hand, Rivets, Belt Hooks, Dubbing, &c.

N. W. Cor. Randolph and Jefferson Sts., PHILADELPHIA.

☞ All Belts Warranted. Orders by Post immediately attended to.

Morse Twist Drill and Machine Co.,

NEW BEDFORD, MASS., Sole Manufacturers of

Morse Patent Straight-Lip Increase Twist Drill,

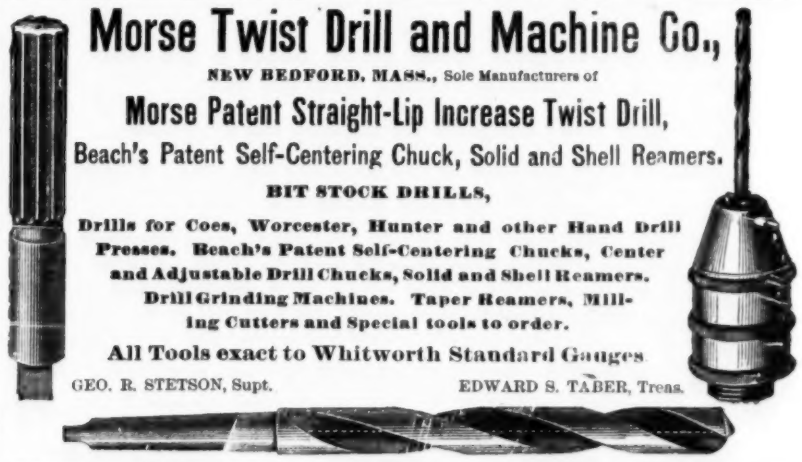
Beach's Patent Self-Centering Chuck, Solid and Shell Reamers.

BIT STOCK DRILLS,

Drills for Coes, Worcester, Hunter and other Hand Drill Presses. Beach's Patent Self-Centering Chucks, Center and Adjustable Drill Chucks, Solid and Shell Reamers. Drill Grinding Machines. Taper Reamers, Milling Cutters and Special tools to order.

All Tools exact to Whitworth Standard Gauges

GEO. R. STETSON, Supt. EDWARD S. TABER, Treas.



PATENT

DRIPPING AND BREAD **PANS;**

Budke's Patent Sheet Iron MEASURES.

Black and galvanized House, Steamboat, Stable and Well BUCKETS.

Powder Kegs, Paint, Putty and White Lead PAILS.

Also Bar, Sheet and Tank Iron and Nails.

LEWIS, DALZELL & CO.,

Pittsburgh, Pa.

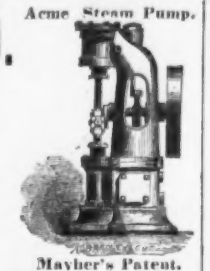
Bucket Plunger.

VALLEY MACHINE CO.

STEAM PUMP

Manufacturers,

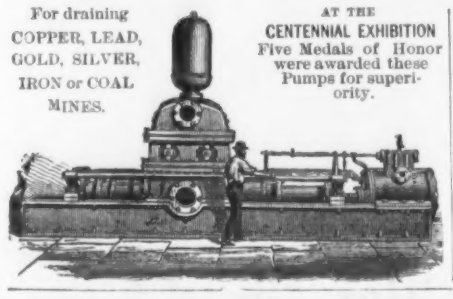
Acme Steam Pump.



Wright's Patent. *Easthampton, - Massachusetts.* Mayher's Patent.

Knowles' Patent Improved Mining Pumps.

For draining COPPER, LEAD, GOLD, SILVER, IRON or COAL MINES.



AT THE CENTENNIAL EXHIBITION Five Medals of Honor were awarded these Pumps for superiority.

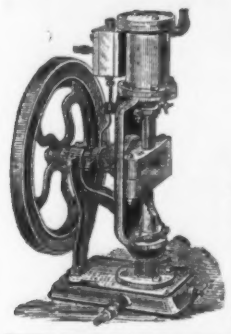
Arranged with Special Reference to Working Water Containing Dirt, Gritty Matter or Acid.

Pumps of capacity of over one million gallons per day are now delivering water through 600 feet vertical column, working entirely without shock or jar, the entire stoppages of Pump aggregating less than twelve hours per year.

ADDRESS

Knowles' Steam Pump Works,

92 & 94 Liberty St., New York.



The Eclipse Steam Pump.

(Patented May 17, 1878.)

A New, Cheap and Simple Boiler Feeder.

This differs from any Pump of its class by doing away with a sliding box or strap, and supplying the places of the same by a hardened steel roller and steel pin. By this construction a great amount of friction is avoided. It is durable, handy and cheap. Anyone of ordinary intelligence can successfully operate it. Prices range from $45 upwards.

Send for circular.

M. SHULTZ,

No. 170 Plum Street, - - CINCINNATI, OHIO.

Send for Illustrated and Descriptive Circular of the

FIRMENICH PATENT

SAFETY STEAM BOILER.

The Boiler that made the Best, Dryest, Hottest and Greatest Quantity of Steam per pound of coal at the Centennial Exhibition, and received the Highest Award therefor,

A DIPLOMA AND MEDAL,

No cleaning of flues, no hard firing caused thereby, and no corrosion caused by the accumulation of soot. Safety from disastrous explosion. The Utmost Durability. Economy, being the most economical boiler in the world. No foaming or priming; entirely dry steam.

J. G. & F. FIRMENICH,

OFFICE,

No. 13 Mortimer Street, - - BUFFALO, N. Y.

DUC'S IMPROVED ELEVATOR BUCKET.

Endorsed by the leading millers and manufacturers in the country No CORNERS TO CATCH; requires less power to run; will throw clean every time; made of the best charcoal stamping iron, and positively indestructible; cost about the same as tin or sheet iron square buckets. Ask your nearest Mill Furnishing House or Millwright for them. We carry a stock of 20,000 of these buckets and can fill orders immediately. Purchasers are cautioned against buying any other spherical bucket. Samples furnished. Address

T. F. ROWLAND, Sole Manufacturer *Brooklyn, E. D., New York.*

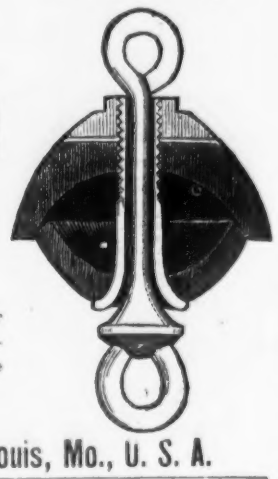
L. M. RUMSEY & CO.,

SOLE OWNERS AND MANUFACTURERS OF

Witherell's and Churchill's Patent

RUBBER BUCKETS, PUMP CHAIN AND FIXTURES

For Chain Pumps.

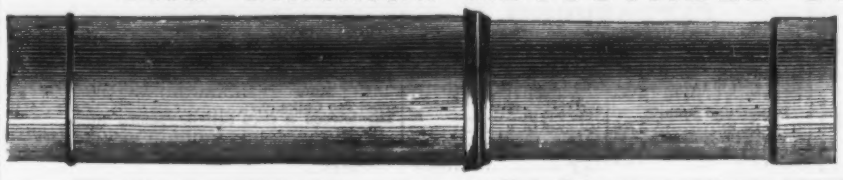


These Patents cover the use of the Rubber, the use of the Nut and Bolt for expanding, the use of the Tube and Valve for draining. All others are infringements, and manufacturers and dealers in infringing Buckets will be prosecuted to the full extent of the law.

For Rubber Buckets, Chain Tubing, Curbs and Fixtures, address

L. M. RUMSEY & CO., 811 North Main Street, St. Louis, Mo., U. S. A.

THE GRAHAM ADJUSTABLE STOVE PIPE.



(Pat. Jan. 9, 1877.)

Medal Awarded at American Institute, 1877.

Sidney Shepard & Co.,

Sole Manufacturers,

BUFFALO, N. Y.

THE EAGLE ANVIL!! WARRANTED!!

(ESTABLISHED) 1843.

These Anvils are *superior* to the best English, or other Anvils, on account of the peculiar process of their manufacture (invented and used only by this concern), and from the quality of the materials employed.

The best English Anvils become hollowing on the face by continued hammering in use, on account of the fibrous nature of the wrought iron—causing it to "settle" under the face.

The body of the Eagle Anvils is of crystallized iron, and no settling can ever occur; the steel face, therefore, remains perfectly true. Also, it has the great advantage, that being of a more *solid* material, and consequently with less rebound, the piece forged receives the full effect of the hammer, instead of a part of it being wasted by the rebound, as of a wrought iron anvil. An equal amount of work can, therefore, be done on this Anvil with a *hammer one-fifth lighter* than that required when using a wrought iron anvil.

The working surface is in *one piece* of JESSUP'S BEST TOOL CAST STEEL, which, being accurately ground, is hardened and given the proper temper for the heaviest work. The *horn* is covered with and its extremity made *entirely of steel*. The body of the Anvil is of the strongest grade of American iron, to which the cast steel face is *warranted to be thoroughly welded and not to come off.*

Price List, October 1st, 1876. ANVILS weighing 100 lbs. o 800 lbs., 9c. per lb.

Smaller Anvils, ("Minims.")

No.	00	0	1	2	3	4	5	6	7	8	9
Weighing about	5 lb.	10 lb.	15 lb.	20 lb.	30 lb.	40 lb.	50 lb.	60 lb.	70 lb.	80 lb.	90 lb.
	$2·25	$2·75	$3·25	$4·00	$4·50	$5·25	$6·00	$6·50	$7·25	$8·00	$8·50

N. B.—These are the RETAIL PRICES. The only additional cost will be the freight to the purchaser's place of residence.

THESE GOODS ARE SOLD BY THE GENERAL AGENTS (with special discounts to the trades.)

New York.—Messrs. TENNIS & WILSON.—RUSSELL & ERWIN MFG. CO.—Messrs. HORACE DURRIE & CO., Boston.—Messrs. GEORGE H. GRAY & DANFORTH. Philadelphia.—Messrs. JAMES C. HAND & CO. Baltimore.—Mr. W. H. COLE Louisville.—Messrs. W. B. BELKNAP & CO. **FISHER & NORRIS, Sole Manufacturers, Trenton, N.J.**

"DRAW UP" PRESSES,

MADE BY

Mf. & H. MFG. CO.,

WATERFORD, N. Y.

JOHNSON'S PATENT UNIVERSAL LATHE CHUCK.

We invite attention to the superior construction of this chuck. Its working parts are **absolutely protected from dirt and chips.** It is strong, compact and durable, and will hold the greatest variety of work, as the jaws are adjustable with a range the full diameter of the chuck. For Price List address.

Lambertville Iron Works, Lambertville, N. J.

SUPPLIES

FOR

Railways, Machinists and Amateurs,

Gum and Leather Belting, Packings and Cotton Waste, Babbit Metal.

FINE TOOLS

for Machinists and Amateurs; Barnes' Foot Power, Scroll Saw; Foot Lathes all kinds. Sole Agents Baxter Steam Engine. Iron and Wood Working Machinery. Send for Price Lists.

JACKSON & TYLER,

18 German St., Baltimore, Md

STEAM PUMPS

Manufactured by

Crane Bros., Mfg. Co.,

CHICAGO.

ANVIL & VISE COMBINED.

Three Sizes.

No. 1, 10½x4 in. face, 4 in. jaw Vise, weight 40 lbs.. $4.50
No. 2, 8x3¼ in. face, 3¼ in. " " 25 " 3.75
No. 3, 9x2½ in. " 2½ in. " " 14 " 3.00

The face of the Anvil is chill hardened. Terms cash. Delivered on cars at Worcester.

RICHARDSON MFG. CO., Worcester, Mass.

Liberal discount to the trade.

Keystone Portable Forges.

Several sizes and 20 styles, for every purpose from the lightest to the heaviest work. Also

PRESSURE BLOWERS

AND

EXHAUSTERS.

Sizes from six inches to six feet.

Send for catalogue.

K. P. F. Co.,

218 Carter Street, - Philadelphia.

Chas. W. Ervien & Co.,

IRELAND ST.

Kensington, PHILAD'A

BUILDERS OF

STATIONARY & MARINE

ENGINES, BOILERS

SHAFTING, GEARING,

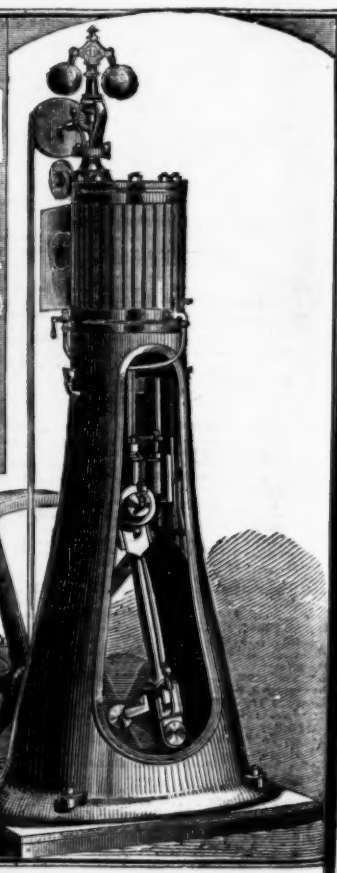
AND

MILL WORK

GENERALLY.

Special Machinery

BUILT TO ORDER.



Vertical

AND

Horizontal

Engines,

Of New and Heavy Designs, from 2 to 100 H. P.,

on hand or in process of erection.

Ludlow Valve Mfg. Co.

OFFICE AND WORKS:

938 to 954 River St. & 67 to 83 Vail Ave., Troy, N. Y.

VALVES.

Double and Single Gate, ¾ in. to 48 in.—outside and inside Screws, Indicator, for Gas, Water and Steam. Send for Circular.

Also FIRE HYDRANTS.

NEW IRON TACKLE BLOCKS.

Norcross Patent.

Galvanized Malleable Iron Shell and Sheave, Steel Hooks, Steel Pins.

Superior to Wood Blocks on account of not Checking and Cracking.

The Strongest, Lightest, Easiest Running and most Durable Block yet produced.

Send for sample and price list of same to

HENRY B. NEWHALL 11 WARREN ST. N NEW YORK AGENT

Providence Tool Co.,

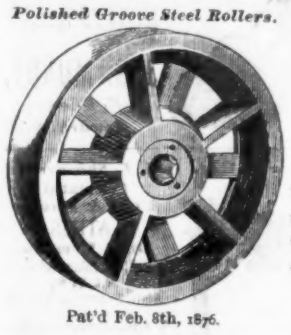
PROVIDENCE, R. I.

Or to **J. H. Work, 13 Pearl St., Boston, Mass.; S. H. & E. Y. Moore, 68 Lake St., Chicago, Ill.; Henry B. Newhall, 11 Warren St., N. Y.**

PENFIELD BLOCK WORKS,

LOCKPORT, NEW YORK,

Polished Groove Steel Rollers. Manufacture a full line of



Pat'd Feb. 8th, 1876.

Tackle Blocks,

AND

IMPROVED IRON SHEAVES.

Our Iron Sheaves when used in Blocks do not add to their cost The deep groove protects the rope, and the iron will not warp, check or crack, as lignum-vitæ is so liable to do. A trial will satisfy.

They make the best Hay Block in the Market.

HENRY B. NEWHALL 11 WARREN ST. N NEW YORK AGENT

THE HP HORSE NAIL CO.,

Cleveland, Ohio.

These Nails are manufactured from the **Best Selected Stock.** Send for circulars showing discounts.

TRADE HP MARK

These Nails are **Guaranteed to be Equal** to the best in the market, and are sold at greatly reduced rates.

5d	6d	7d	8d	9d	10d
26c.	23c.	21c.	20c.	19c.	18c.

NORTHWESTERN

HORSE NAIL CO.

ESTABLISHED IN 1862,

Hammered & Finished Horse Nails.

We offer our Finished Nail to the trade with the confidence that it has no equal in the market. It is the genuine "Northwestern" Nail, Finished, and we give it our unqualified guaranty.

Office and Factory, 56 to 68 Van Buren St., Chicago.

A. W. KINGSLAND, Secretary.

Our agents, Graham & Haines, 113 Chambers Street, New York, carry a full line of our goods, and will be pleased to serve you at Factory prices.

GLOBE NAIL COMPANY,

MANUFACTURERS OF

Pointed Polished & Finished Horse Shoe Nails,

Recommended by over 20,000 Horse Shoers.

All nails made from best NORWAY IRON, and warranted perfect and ready for driving. Orders filled promptly and at lowest rates by

GLOBE NAIL CO., Boston, Mass.

RHODE ISLAND HORSE SHOE CO.,

OFFICE, 81 Canal Street, Providence, R. I. **WORKS at Valley Falls, R. I.**

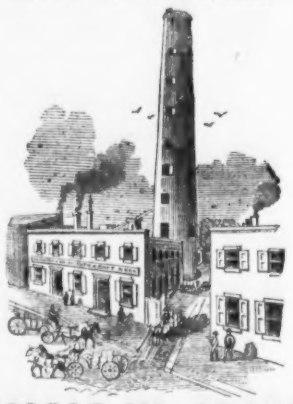
Manufacturers of

PERKINS and RHODE ISLAND PATTERNS of

HORSE AND MULE SHOES.

The Oldest Shot Tower in America.

FOUNDED JULY 4, 1808.



THOMAS W. SPARKS,

Manufacturer of

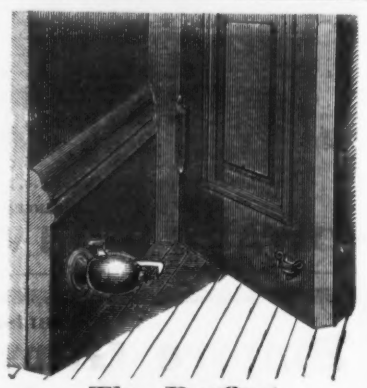
SPARKS'

American Chilled Shot,

Rivaling the English and all Others.

STANDARD DROP & BUCK SHOT AND BAR LEAD.

121 Walnut Street, Philadelphia.



The Perfect

DOOR STOP AND HOLDER,

Will catch and hold the door every time, and *no wind can blow it loose.* It saves the *wall*, the *paper*, *glass* and slamming of doors. **Liberal Discount to the Trade.** Address,

SPENGLER & CO., East End, Pittsburgh, Pa.

B. W. PAYNE & SONS,

Corning, N. Y.,

Established in 1840.

Eureka Safety Power.

h.p.	cyl.	ht.	space.	wt.	price.
2	3½	4x48 in	40x25	900	$150
4	4x6	56 "	46x30	1600	250
6	5x7	72 "	72x42	2700	400

Also, Spark Arresting Portables and Stationary Engines for Plantations. Send for Circulars.

WESTON DYNAMO-ELECTRIC MACHINE

NICKEL.

The rapid increase in the use of Nickel-Plating owing to the introduction of the Weston Machine and the very low price of nickel material, enables us to give greatly reduced estimates for complete outfits.

We are furnishing outfits specially adapted for Stove Work, giving a pure white deposit on plain or mat surfaces.

Outfits complete, with Dynamo-Electric Machine Tanks, Anodes, Solution, &c., &c., $250.

We beg to refer to the following Stove Manufacturers among 500 other houses using the Weston Machine: Richardson & Boynton, S. S. Jewett & Co., Detroit Stove Works, Michigan Stove Co., Co-operative Stove Co., E. & C. Gurney, Hamilton & Toronto, and many others.

INFRINGEMENTS.

We call attention to infringements of the Weston Machine, in which Automatic Switches are used to prevent change of current. The Weston Co. are owners by grant or purchase of all forms of Automatic Switches for Plating Machines. The adoption of these machines will certainly lead to great loss to parties purchasing or using them.

CONDIT, HANSON & VAN WINKLE

Sole Agents NEWARK, N.J. U.S.A.

GEO. W. JACKSON,

Successor to S. S. OWEN & CO.,

Nickel Plater

And Polisher of all kinds of Metals,

211 East 22d Street, bet. 3d and 4th Avenues,

NEW YORK.

JOHN W. QUINCY,

98 William Street, New York.

NICKEL.

Solder, Lead, Block Tin, and other Foundry Metals. Cut Nails.

A. T. COLT,

Nickel-Platers' Supplies.

ARMATURE ELECTRO-PLATERS' MACHINES.
PURE NICKEL in grain, Anodes, Sulphates and Chloride,
COBALT, metallic & sulphate.
VIENNA LIME, CROCUS,
Silver (.999 pure) granulated or rolled. Gold and Platinum rolled to order.
ROUGE, COMPOSITION
EMERY TRIPOLI,
CYANIDE POTASSIUM
BATTERIES & MATERIALS,
BUFFING LATHES, &c.
47 Beekman St., N. Y.

NICKEL PLATING.

PHILADELPHIA. 37½ N. 7th St. WORKS.

We make a specialty of the wholesale trade.

Send for price and descriptive lists (four patterns of Buckets) with discounts to dealers.

Quarter million in satisfactory use.

THE RIVET BUCKET CO., 54 & 56 Franklin St., Chicago

BOSTON.

Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.

Anvils.—"Eagle American".....per lb. 9c: dis 20 %
Anvils and Vise (combined).
No. ..... 1, $17·50; 2, 3·75; 3, 3·00 each, dis 25 %
L'Hommedieu Shin.....dis 15 %
Axes.—Blue Jacket..... 9 00
Racer..... 8 00
Red Cross, Handled..... 10 50
" " Boy's..... 9 00
Blue Jacket " " 10 00
Axe Handles.—Wadleigh's Oak—
A (Extra, $2·50. B (No. 1) $2·00. C (No. 2) $1·50 ₱ doz
Blind Hinges.—Orr or Washburn's..₱ hun d sets $6 50
Blind Pasts.—
Orr or Washburn's.....per hundred set $4 50
Bolts.—Carriage, Phila.....dis 60&20 %
Carriage Common.....dis 75 %
Borax.—Best Refined.....₱ lb 10c
Borers.—Angle, Backus'.....dis 30 %
Boring Machines.—Angle.....each $4 50
Common, Snell's quality.....each 3 50
Braces.—Barber's..... dis 40&5 %
Backus'.....new list 50&10
Spofford's.....dis 50 %
Bracket
Saw Frames, with patterns complete.....₱ doz $5 50
Saws..... " 88
Star Bronzed.....new list net
Star Japanned.....new list net
Store Shelf.....new list net
Brass Faucets.—L. F. & C.....dis 50 %
Brushes.—Horse, Patent Metallic.....per doz. $4·50
Butts.—Union Drilled Loose Joint.....dis 66⅔ & 10%
" " Wire Fast Joint.....dis 50&10 %
" " Acorn Loose J't.....dis 65&10 %
Brass Butts.....dis 30 %
Wrought Table Butts and Back Flaps
.....revised list, dis 35 %
Wrought Narrow Butts.....reduced, dis 40 %
Cards.—
Curry Cards No. X, per doz., $0·55. .....dis 30 %
Horse No. X, " 0·80.....dis 30 %
Wool No. 8X, " 2·60.....dis 15 %
Cotton " No. 10, " 3·80.....dis 10 %
Cartridges.—U. S. Cartridge Co.....dis 60 %
Chisels.—"Buck Bros." Shank Goods.....dis 20 %
Socket.....dis 20 %
Compasses and Dividers.—Bemis'.....dis 40 %
P. S. & W.....dis 30 %
Cordage.—Manila (usual trade dis.).....₱ lb 12½c
Corn Hooks.....per doz $2·75
Crow Bars.—Solid Steel.....₱ lb. 9c
Cow Ties.....dis 30 %
Dividers.—Cook's Nickel Plated.....dis 15 %
Door Springs.—Moseley—

Per doz.	$9·00	12·00	15·00	18·00	24·00
No.	0	1	2	3	4

Torrey's.....$2·50
Gem.....dis 10 %
Emery.—Alden.....₱ lb 7c
Wellington Mills.....₱ lb 10c
Files.—American.....dis 35 %
Nicholson, new list.....dis 35 %
Wheeler, Madden & Clemson.....$ to £ 10 %
Stubb's Tapers, genuine, 3 in., $1·50; 3½, $1·67½, $1·88; 4½, $2 13; 5, $2·50
Hammers.—Maydole—new reduced list.....dis 15 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1¼, $8·75.....dis 25 %
M., B. & D., solid cast steel, bell face, No. 1 $11; 1¼, $9·75.
Hammond—new reduced list.....dis 15 %
Hangers & Rollers.—Anti-Friction.....dis 40 %
Climax.....dis 40 %
Acme Rollers.....dis 40 %
Hatchets.—Underhill Edge Tool Co.....dis 25 %
C. F. Dowse, warranted Cast Steel—
Shingling.....0, $4·75; 1, $5·25; 2, $5·75
Claw.....1, 5·75; 2, 6·25
Lathing.....1, $5·50
Axe Pattern.....1, $7·00; 2, 7·50
Broad....0, $5·75; 1, $6·50; 2, $7·50; 3, $9·25; 4, $10·75
5, $12·75 6 $14·75
Hinges.—Strap and T Stanley Works.....dis 60 %
Pinte, Loose and Fast Joint.....₱ lb 5c
Wrought Screw Hook.....₱ lb 5c
Knobs.—Imp. Extension Silver'd Glass.....₱ doz $8·00
Lanterns.—Tubular No. 0.....$10·00
Guarded. No. 76, (with kerosene oil and candle burners).....5·50
Lead.—Sheet, 6c.; Pipe, 7c.....dis 10 %
Locks.—Norwalk Lock Co.....dis 50 %
Mattocks.—
A. F. & Co., axe finish, long cutter.....$10 00
Short cutter.....9 50
Pick.....10 00
Meat Cutters.—"Miles's" Challenge.....dis 30 %
No. 1, $22·00; 2, $30·00; 3, $40·00.
Metal.—Babbitt.....No. 1, 35c; 8, 25c; 5, 15c ₱ lb
Nails.—10d and larger.....$2 40
Nail Pullers.—Little Giant—Small.....per doz., $22·00
Little Giant—Large.....30·00
Padlocks.—Wilcox.....dis 33⅓&5 %
Picks.—A. F. & Co., Solid Eyes.....5 10 6 00
$7 50 $8 00
Pins.—Universal Hatand Coat all wood—
2 in.....₱ gross $2·50; 3 in., 3 50; 4 in., 4 50—dis 15 %
Planes.—Auburn Tool Co.....dis 50 %
N. Y. Tool Co.....dis 50 %
Plated Ware.—Rogers bros.....dis 40 %
Pocket Knives.—Conn. Cutlery Co.....new net list
American Shear Co.....dis 40 %
Plumb & Levels.—Stanley.....dis 60&10 %
Pulleys.—Axle.
Fr'me pol. wh't pt. face. No. 15, ¾ in., 20c.; 16, 2 in., 26c.
Pol. wh't br'zed face No. 115, 1¾ in., 20c.; 116, 2 in., 26c.
Pulley Blocks.—"Best Boston Make".....ne
Rail Barn Door.—For Novelty and Anti-Friction Hangers.....per foot 7c.. dis 40 %
Refrigerators.—Heins Patent.....dis 25 %
Rivets.—Black, in papers.....dis 50 %
Carriage, oval head, Nos. 3, 4, 5, 6, 7, 8,.....dis 40 %
13 13 14 14 15 16c ₱ lb
Sad Irons.—Bliss & Drake.....₱ lb 2¾c
Sand Paper.....dis 15 & 5 %
M. B. & D......0 to 2, $4·25; 2 to 3, $4·75
Saws.—*Hand and Pinet*—
X Cut, Wheeler, Madden & Clemson.....per ft., 40c
" Champion..... " 40c
" Lightning..... " 45c
" Great American..... " 50c
Wood Saws, Welsh & Griffith.....₱ doz $12·00
Wheeler, Madden & Clemson's, same list as "Disston's".....dis. 20 %
Diston's.....dis. 20 %
Saw Horses.—Extra.....₱ doz $2 25
Folding..... " 3·50
Screws.—Am. Screw Co., new list Sept. 1st.....dis 55 %
Aiken's.....dis 55 %
Scythe Stones.—
"Willoughby Lake," first quality.....₱ gross $6·50
" " second quality..... " 3·00
Shovels.—O. Ames.....dis 34½ %
M. P. & D.....dis 37½ %
Spading Forks.—W. C. & Co., new list.....dis 15 %
Tools.—Aiken's Pattern.....₱ doz $5·00
Aiken's Genuine, $12.....d s 40&10 %
" " Saw Sets, $13.....dis 40&10 %
" " Pocket Wrenches, $8.....dis 50&10 %
Traps.—Oneida.....dis 30 %
Blake's.....dis 50 %
Vises.—K. P. & Co.'s Solid Box, Blacksmith...₱ lb 10½c
Parker's Parallel.....dis 10 %
Backus.....dis 25 %
" Howards." Parallel.....dis 25 %
Wardrobe Hooks.—Wire to drive.....₱ gross $1 00
Weights.—₱ iron Weights.....₱ lb 1½c
Wedges—Axe.....₱ doz 5 c
Wire.—
Eureka in spools. No. 28 to 40 assorted...₱ gross $8 00
Wire Netting.—Clinton Wire Cloth Co., Green, 3½c
Drab or Black.....₱ ft 3½c
Wrenches.—A. G. Coes & Co.....dis 50&10 %
"Girard".....dis 50, 10&10 %
Agricultural.....No. 10, $3·60; 12, 4·80, net
Wringers.—
Universal XX No. 2.....₱ doz $63 00; 2½, 60 00
Novelty, No. 10.....₱ doz 60 00
" No. 2..... " 63 00
" No. 22..... " 6, 00
Excelsior.....A, $84 00; B, 92 00; CC, 114 00 ₱ doz
" E, set tubs.....₱ doz 66 00
Eureka..... " 54 00
Wittington, Cooley & Co.—Hoes, Rakes, Forks, &c. dis 40 %. Special rate for Export.

ST. LOUIS.

Corrected weekly by Semple & Birge Mfg. Co.

Animal Pokes.....$6·50 ₱ doz. net
Apple Parers.—Conqueror.....₱ doz $6 75
Hudson's Rotary..... " 6 75
Axes.—Wm. Mann's, Red Warrior.....₱ doz 9 50
"C. Marshall".....9 00
Handled..... $3 extra
Double Bitted.....19 00
Hunt's.....12 00
Axles.—Jones, Henry & Co.'s" Patent Lubricating, Half Patent. Swelled Taper, Plain Taper and Concord Axles.....dis 35 %
Common Axles (Pat. Lubricating), 1⅛ inch and upward.....₱ lb. 5½c
do. less than 1⅛ inch..... " 5½c
Babbitt Metal.—

Nos.	4	3	2	1	A 1	Genuine.
	9½	11	16½	20	31	34c ₱ lb

Bellows.—Best St. Louis make, new list.....dis. 15 %
Bells.—Troy, Church, School and Farm Bells..₱ lb 30c
"Improved Amalgam Bronzed" 15 in., $2·00; 17 in., $2·50; 19 in., $4; 21 in., $5; 24 in., $14
Belting.—"Boston Belting Co.'s" Rubber. dis 50&10 %
Bradford & Sharp's" Oak-Tanned Leather.... dis 35 %
Blue Grass Strippers.—Hand Machines ₱ doz $27 00
Boilers.—Farmer's Profit Feed Boilers.....dis 30 %
Caldrons.....dis 30 %
" Sugar Kettles.....dis 30 %
Bolting Cloth.—New gold list.....net
Bolts.—Arms. Bell & Co.'s Carriage & Tire.....dis 75 %
Broadcast Seeders.—Cahoons Patent Hand dis 20 %
" " Power dis 40 %
Buggies.—Favorite Corduroy finish.....$110 00
" Leather " 115 00
" & top. " 140 00
Churns.—Julien, No. 2, $7·00; No. 3, $7·50; No. 4, $8·50.....dis 25 %
Cider Mills.
Buckeye Senior $27·00 Buckeye Junior. 18·00.....net
Coffe Roasters.—Sperry's.....dis 20 %
Corn Stalk Cutters.—"Perkin".....dis 20 %
Corn Drill.—"Campbell".....$10 00
Corn Knives.—Dunn Edge Tool Co.'s Chip...₱ doz 4 50
Seymour Mfg. Co.'s solid Steel Back..... " 4 50
Corn Planters.—"Champion" Horse.....$44 00
St. Louis Hand....₱ doz $12 00
Corn Shellers.—Sandwich Mfg. Co.'s—
Power Shellers.....dis 10 %
Hand Shellers.....Special rates
Cotton Gins.—Carver, with 10 in. Saws, $8 2 saw, net
12 in. Saws, $4 00 a saw.....net
Cultivators.—"Buckeye" 4 shovel..... $ $29 25
Crow Bars.—Steel Pointed.....₱ lb 6
Drag Saw Machines.
Carver's Iron Drag Saw.....dis 20 %
Excelsior Drag Saw with Log Trucks.....dis 20 %
Fanning Mills.—Nash & Cutt's.....dis 25 %
Feed Cutters.—Burdick National.....new list, net
Sanford No. 1, $9 25; No. 2, $7 25.....net
Bowman's Lever Cutter, $6·25.....net
Files.—Black Diamond, Mill.....dis 70 %
" Bastard.....dis 30 %
" Taper.....dis 3 &5 %
Forges and Blowers.
Keystone Portable Forge Co's.....Cost 5 %
Forks and Hoes.
Auburn Mfg. Co.'s Hay and Manure Forks
New list.....dis 15 %
Auburn Mfg. Co.'s Handled Hoes..new list, dis 15 %
Garden Seed Drills and Wheel Hoes.
Allen's Double Wheel Hoe.....new list, dis 20 %
" Planet Drill, Nos. 2 and 3.....new list, dis 25 %
" Combined Drill and Wheel Hoe " dis 25 %
Grain Register.—"Excelsior".....$13 00
Grinding Mills.—Challenge Feed Mills.....dis 20 %
Sedgebeer's Nonpareil Mills.....dis 20 %
Bradford's French Burr Mills.....dis 5 %
Osage Corn & Cob Mill.....$34 00
Handles.—No. 1 Fork, Hoe and Rake.new list, dis 25 %
No. 2 Fork, Hoe and Rake.....new list, dis 30 %
Ax, Pick, Sledge and Small Handles.....net list
Hand Carts.—"Champion".....dis 10 %
Hay and Cotton Presses.
Dederick's Railroad.....dis 10
" Perpetual.....dis 10
Hay Knives.
Dunn Edge Tool Co.'s.....₱ doz $12 00 net
Lightning (Weymouth's Patent).....₱ doz $19 20
Horse Nails.—National Patent Pointed.....50c rate
National Patent Pointed, extra finished.....25c "
Horse Powers.—Pitts or Carey's Patent.....dis 10 %
Wheeler's Railway.....dis 10 %
Sandwich Lever.....dis 10 %
Hose.—
Boston Belting Co.'s Rubber Medium Sizes.....dis 50 %
" " S. Sis. Hydrant..dis 60 %
Ice Tools......new list net
Lawn Mowers.—Charter Oak & Archdeclan dis 30 %
Money Drawers.—
Pierpont & Co.'s Excelsior.....per doz $33·00 net
Nails.—Wheeling Riverside Brand.....$2 55 rates
Packing.—Boston Belting Co.'s Rubber, Plain..dis 50 %
Boston Belting Co.'s Rubber, Pure.....dis 25&5 %
" " No. 3 Plain.....dis 40 %
" " Round and Square.....dis 0 %
Plows.—Avery's Cast and Steel.....new list, dis 20 %
Avery Sulky Plow.....new list, dis 25 %
Collins Cast Steel.....new list net
Plow Sulky.—Buckeye.....$27 0 net
Post Hole Augers.—Clark's Patent—
No. 1, ₱ doz. $27; No. 2, $30; No. 3, $32.....dis 25 %
Pulleys.—3 inch.....per doz $3 70 net
4 inch.....per doz 2 50 net
Pumps.—St. Louis, Farm, Patent Metal Lined..dis 30 %
Rakes.—Advance Sulky.....each $4 00 net
St. Louis Revolving 14 tooth.....dis 10 %
" " 16 " 4 65 net
" Hand Hay Rake.....per doz $2·75
Reaper Knives and Sections.—
Geo. Barnes & Co.'s Knives.....dis 40 %
" " Sections.....dis 40 %
Road Scrapers.—Steel.....each $3·00
Cast Iron.....dis 10c
Saws.—Curtis & Co.....dis 15 %
Scythes.—Dunn Edge Tool Co.'s.....dis 35 %
Shovels and Spades.—Groom Shovel Co.....dis 40 %
Grain Scoops—Patent Corn Straps Groom Shovel Co.....dis 40 %, and 50c per doz extra
do. M. Rowland & Co., dis 30 % and 50c "
Snaths and Cradles.—Seymour Mfg. Co's..dis 25 %
Sorghum Machinery.—Beil Cane Mills.....dis 30 %
Scantlin's Seamless Pans and Evaporators.....dis 30 %
Springs.—Cleveland Spring Co.'s—
Carriage and Express.....₱ 24 c
Steam Engines.—Bookwalter.....dis 30 %
Trade.....dis 10 %
Mansfield.....dis 10 %
Thimble Skeins.—Whitewater's.....dis 40 .10 &
Wheelbarrows.—Champion Iron Wheel.₱ doz $ 9·50
Champion Wood Wheel.....₱ doz 2·50
" Garden.....₱ doz. 30·00
Wagons.—Whitewater Farm Wagons—
Thimble Skein—
2¾ in. $66; 3 in. $67·50; 3½ in. $70; 3½ in. $71
Wire Bale Ties.—Buckeye Double Twist.....net list
Dederick Adjustable.....new list, 1 25 %

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.)

Tin Plate.

IC, 10x14, Best Char..	$ 6·50	DX, 12½x17, B. Char.	$ 8·50
IX, 10x14, " ..	8·50	DXX, 12½x17 " ..	10 50
IC, 12x12, " ..	6·50	DXXX, 12½x17 " ..	12 50
IX, 12x12, " ..	8·50	IC, 20x28, " ..	16·00
IC, 14x20, " ..	6·50	IX, 20x28, " ..	20·00
IX, 14x20, " ..	8·50	IXX, 20x28, " ..	25.00
IXX, 14x20, " ..	10 50	IC, 14x20, Best Roof..	6 00
IXXX, 14x20, B. Char.	12 50	IX, 14x20, " "	8·00
IXXXX, 14x20, " ..	14·5	IC, 20x28, " ..	12 50
IC, 12x24, " ..	6·75	IX, 20x28, " ..	16·50
IC, 14x14 " ..	13·50	IC, 10x14, Best Coke..	5 75
IX, 14x14, " ..	16·00	IC 14x20, " ..	5·75
IXX, 14x14, " ..	18 50	IC, 10x20, " ..	5·00
DC, 12½x17, " ..	6·50		

Sheet Iron.	Com'n.	S L U Sm'th.	D. Ref'd Sm'th.	Juniata Sm'th
No. 16 to 20	2·9c	3·8c	5·6c	7·2c
No. 22 to 24	2·9c	3·8c	5·8c	7·4c
No. 26	3·c	4·c	6·c	7·6c
No. 27	3·10c	4·1c	6·2c	7·8c

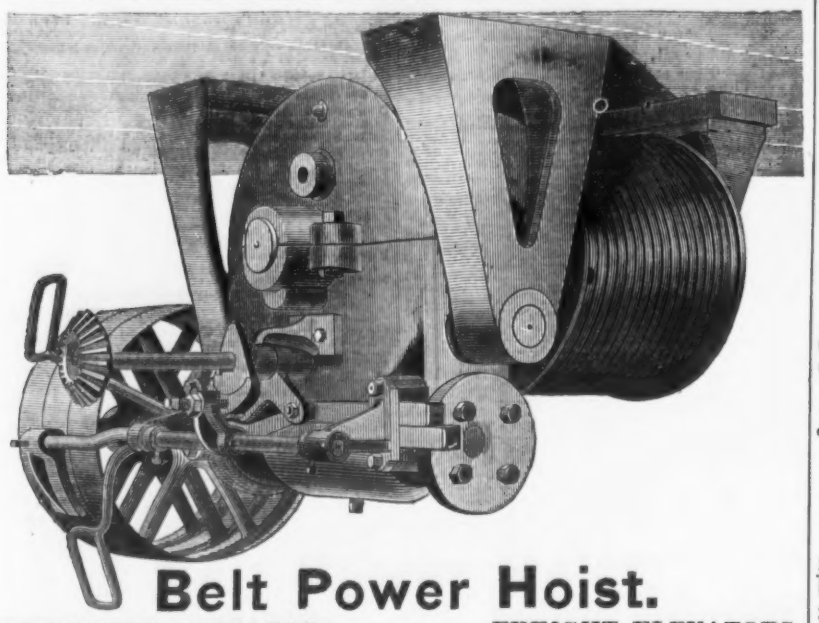
Genuine Russia Iron.
Perfect—No. 9, 10, 11, 12.....per lb. 12½c
No. 1 Stained—No. 9, 10, 11, 12.....per lb. 12½c
Tare 22 lbs. to Bdle. For less than Bdle. add 1c. ₱ lb.
Patent Planished Iron.
No. 24 to 27, A quality.....per ₱ 10½c
" " B " " 9½c
For less than Bdle. add 1c. per lb.
Galvanized Sheet Iron.
Juniata, or 1st quality.....dis 40&25 %
Block Tin.
Banca, Large Pigs.....21c | do. Small.....18c
Straits, Large Pigs.....17c | Bar.....19c
Eng. Ref'd, Large Pig...17c |
Solder.
Extra in Bars.....18c | No. 2, in Bars.....9½c
No. 1, in " .....10½c | Spelter Solder.....24c
Pig Lead—Pigs.....4c | in Bars.....5c
Antimony.....15c
Bismuth.....$ 1 50
Nickel.....2 25
Crucibles.—Dixon's.....₱ No. 4c
Babbit Metal.

No. 1	₱ lb. 16c	No. 3	₱ lb. 11 c
" 2	" 14c	" 4	" 7½c

Copper.
Brazier's, 32x60, 14 to 100 lbs. Sheets.....28
" " 10, 11 & 12 lbs., " 30c
" " 8 and 9 lbs. " 32c
" " 6 and 7 lbs. " 34c
Tinned, 14x48, 14 and 16 oz.....26c
Planished, 14x48, 14 and 16 oz.....34c
" Boiler Sizes. 14 and 16 oz.....36c
Gutter Copper, 20 and 24x52, 10, 11 and 12 lb. Sheets.30c
" " 14 lb. Sheets.....28c
Reservoir Copper, 16x60 and 18x60.....30c
Bar Copper, Square and Round, ¼ to 1½ inch.....28c
" " " ⅝ inch.....31c
Copper Bottoms.....28c
Soldering Coppers.....3 c
Brass.
Roll, No. 10 to 28, 12 in. in width.....27c
" 30, 12 in. in width.....28c
" 32, 16 " 35c
" 34, 16 " 38c
" 36, 16 " 37c
Platers, No. 40, 6.....50c
Brass and Copper Wire.

	Brass.	Copper.		Brass.	Copper.
No. 0 to 20	30c	4 c	No. 24	37c	47c
" 21	33c	45c	" 25	41c	50c
" 22	34c	44c	" 26	43c	52 c
" 23	32c	45c	" 27	45c	55c

Brass Spring Wire, 2c. ₱ lb advance.
Brass Tubing.
Plain to No. 20.....40c | 5-16 inch.....40c
⅜ inch.....40c | ½ " 70c
Copper Rivets and Burs.....dis 0 %
Brass Kettles 7 to 13 inches.....₱ lb 35c.
" " all sizes over 13 inches....." 40c.
Sheet Zinc.—600 lbs. cask.....
250 lbs. cask.....
Sheet.....10
Wire.—Iron, Bright Market.....dis 50 %
Iron, Coppered Market.....dis 45 %
Fence, Nos. 7, 8 and 9.....₱ lb 4½c
Trellis, Nos. 10 and 11....." 5 c
" No. 14.....5½c
Hay Baling, Charcoal, No. 10 and 11.....5½c
" " No. 12.....5½c
Broom, Tinned, Nos. 18 to 22.....11c
Fence Staples.....per keg 3½c
Per lb.....9 c
Iron Rivets.—Black, papered.....dis 25 %
Tinned, papered.....dis %
In bulk.....new 3-16 ¼ 5-16 ⅜ in diam
7·8c 7·8c 6·8c 6·8c per lb.
Tacks.—New Hardware List.....dis 50 %
Sad Irons.....₱ lb 3 c
Enameled Kettles.—Standard Mfg. Co.dis 50&10 %
Enameled Sauce Pans.
Standard Mfg. Co.....dis 40 %
Enameled Boilers.—Standard Mfg. Co.....dis 40 %
Dripping Pans.—Smooth Iron.....₱ lb 8½c
Geneva Fluters.....per doz $1·50
Monroe Fluters....." 12 50
Stove Polish.—Dixon's.....per gross 6 00
Gem.....4 50
Japanese.....3 50
Dixon's, in bulk.....₱ lb 8c
Coffee Mills.—Parker's.....dis 20 %
Granite Iron Ware.....dis 30 %
Spoons.—New list.....dis 15 %
Retinned Iron Ware.....dis 30 %
Plain Stamped Ware.....dis 40 %
Japanned Ware.—St. Louis List.....dis 40 %
Fry Pans.....dis 50 %
Zars.....dis 50 %



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PASSENGER ELEVATORS. FREIGHT ELEVATORS.

INDEPENDENT STEAM ELEVATOR ENGINE.

Hydraulic Elevators to run from City Pressure; Condensed Air and Hydraulic Elevators operated by Steam Pump; Independent Steam Elevators; Belt Power Elevators; Portable Hoisting Machines. All kinds of HOISTING MACHINERY a specialty.

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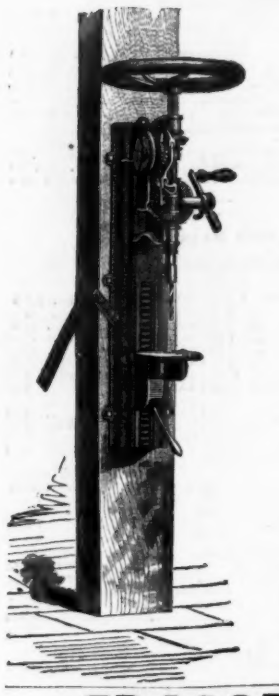
Greenfield, Mass.

PATENT LABOR SAVING TOOLS,

For Machinists, Blacksmiths, &c.

The Lightning Screw Plate, Lightning Bolt Cutters, Green River Drilling Machines, Green River Tire Shrinkers, Fine Taps and Dies, Reamers for Bit Brace Use, &c., &c.



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P. O. Box 4627.

Manufacturers, Importers and Exporters of

Fine Tools & Supplies for Machinists, Blacksmiths and Fine Metal Workers.

Sole Agents for Elterich's Celebrated Taps and Dies, Die Holders, Patent Tap Wrenches, and Patent Drill Chucks.
Henry Whiton's Celebrated 2 in. Lever Chuck.
The Briggs Lathe. Howell's Turning Lathes, Driving Wheels, &c., &c.

New York Agents for **THE LIGHTNING SCREW PLATE.**

HAMMER & CO.,

Branford, Conn.,

Manufacturers of the following *Patented* Articles of

MALLEABLE IRON:

Hammer's Adjustable Clamps.
Hammer's Malleable Iron Oilers.
Hammer's Mall. Iron Hand Lamps.
Hammer's M. I. Hanging Lamps.

For Sale by all the principal Hardware Dealers.

Malleable Iron Castings

Of superior Quality and Hardware Specialties in Malleable Iron made to order.

STEAM ENGINES,

Vertical or Horizontal.

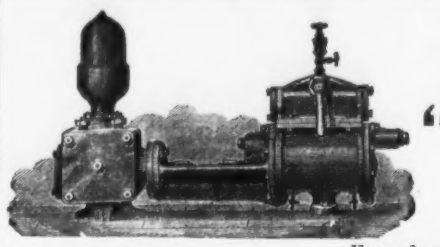
Combined, as in cut, 2 to 12 H. P., or on independent beds, **2 H. P.** upwards to **200 H. P.** *Plain* or with *Automatic Variable Cut-off*. We can refer to hundreds in use, of all sizes, giving perfect satisfaction.

Yacht Engines and Steel Boilers, Shafting, Pulleys, Hangers, &c.

Send for pamphlet, stating where you saw this, to

Fitchburg Steam Engine Co.,

Fitchburg, Mass., U. S. A.



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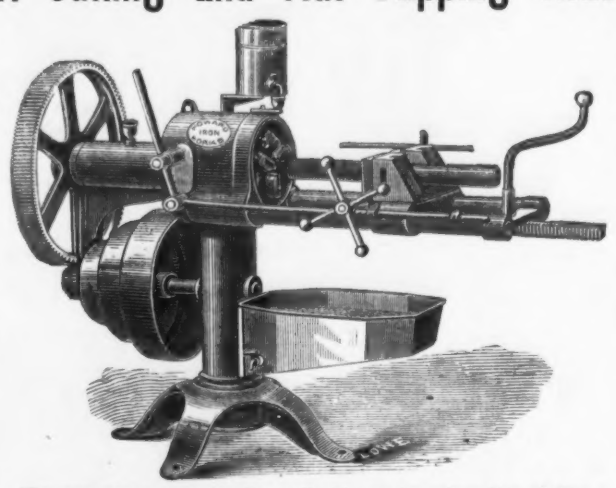
SCHLENKER'S

Screw Cutting and Nut Tapping Machines.

No. 5 cuts from ¼ to 1¼ inches, price $250
No. 5½ " ½ " 2 " " 350
No. 6 " ½ " 3 " " 700
No. 8 " ¾ " 3 " " 500
No. 4 (Double Header) cuts from ¼ to ⅞ inch, price, 350



This engraving represents a No. 5½ Machine, and cuts from ⅜ to 2 inches.

1 First Premium awarded at the Centennial Exhibition.

Send for complete (illustrated) catalogues.

Cuts 300 ¾-inch Bolts, 3 inches each, in one hour.

MANUFACTURED BY THE

HOWARD IRON WORKS, Buffalo, N. Y.

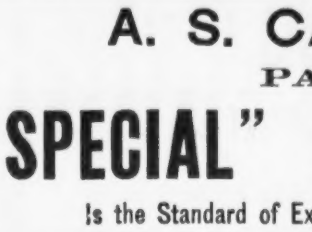
ESTABLISHED 10 YEARS.

Empire Gum-Core Packing.

Patented Dec. 27th, 1870, and April 4th, 1871.

The First Self-Lubricating Gum-Core Packing.

The only one receiving Medal, Certificate of Award, and Report from Judges at Centennial International Exhibition, at Philadelphia in 1876.



Report of Judges on Awards: "That the Piston Rod Packing in composition and combination is well fitted to furnish the tightness and elasticity required."

Trade Mark, Pat. July 4, 1870.

We have scores of testimonials from reliable parties who have used the "Empire" from five to ten years, and give a few samples; but the best evidence of its being the very best in the market, is the fact that so many unscrupulous parties are imitating it as near as they dare, and trying to make sales for their cheap material on the reputation of the "Empire," representing to have something equally as good at a lower figure, always making the "Empire" the basis of operations.

FAIRMOUNT WATER WORKS, Phila., May 8, 1871.
Messrs. Wm. M. Canfield & Co.—GENTLEMEN: We have now used your Empire Packing in the pumps of these works the past three years. We have run the same Packing without renewal for 18 months; the time saved in stopping to repack has more than twice paid for the Packing used. It is the best Packing ever invented.
JOSEPH MOYER, Engineer.
N. B.—Still in use here, making a service of 10 years.

NEW BRITAIN, CONN., Sept. 24, 1874.
Messrs. Wm. M. Canfield & Co.—GENTLEMEN: Please send us by cheapest freight route, 19 feet 1¼ Empire Packing, same as sent us about two years ago. We have had in use one set of Packing of above size since January 1st, 1873, and when taken out last night was in good condition, and looked as though it would last an indefinite amount of time. We had to remove it in order to make repairs to our engine. Please send above at once and oblige, Yours truly, P. & F. CORBIN.

The claims of the "Empire" to superiority are firmly established, and it is fast superseding all other kinds of Packing. It is alike adapted to Stationary, Locomotive and Marine Engines, Hot and Cold-Water Pumps.

☞ Write for new discounts to dealers and consumers.

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127 N. Seventh St., Philadelphia, Pa.

THE MACKENZIE PATENT CUPOLA & BLOWER.

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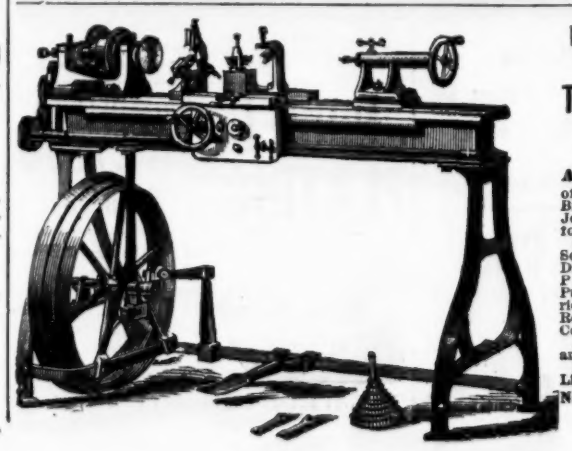

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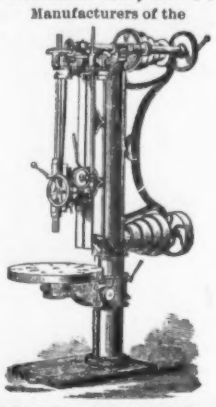

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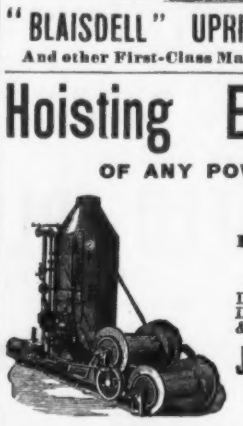

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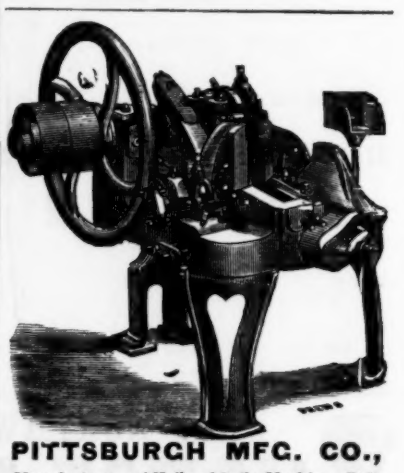

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1½	26.00	30.00	2.50	8.00
2	31.00	35.00	2.75	10.00
2¼	36.00	41.00	3.25	12.00
2½	40.00	45.00	3.50	14.00
2¾	45.00	51.00	3.75	16.00
3	50.00	57.00	4.25	19.00
3½	59.00	67.00	4.50	23.00
4	69.00	78.00	5.00	28.00
4½	80.00	90.00	5.50	34.00
5	90.00	101.00	6.00	40.00
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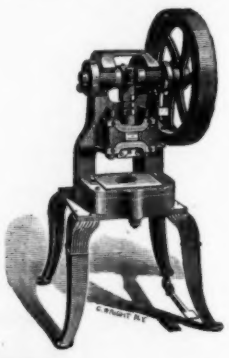

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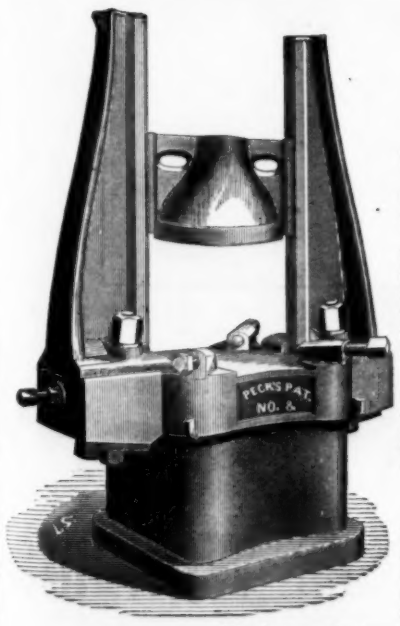

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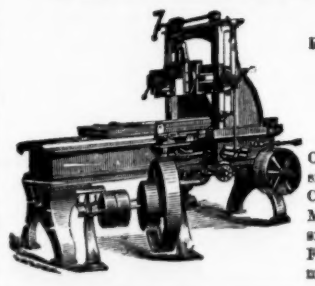

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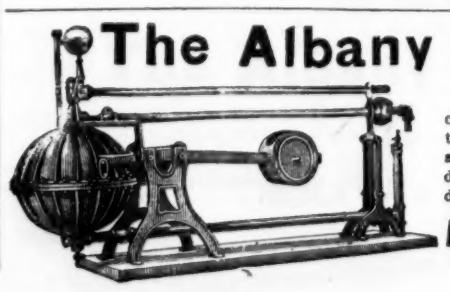

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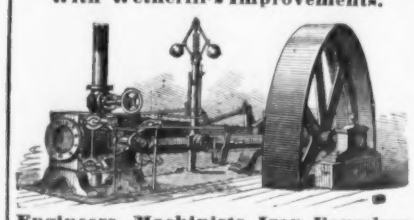

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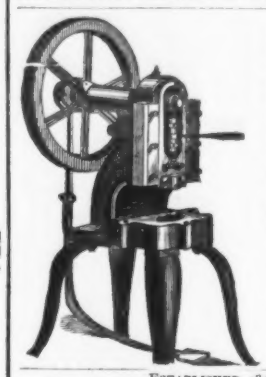

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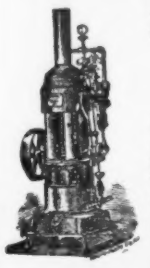

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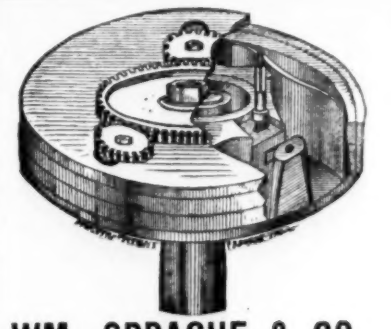

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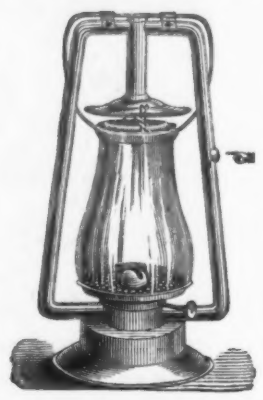

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See cut of Elevator Hoisting Machine in issue of June 20, 1878, page 40.

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TRIAL OF THE IMPROVED LIGHTNING SAW.

The Emperor Dom Pedro, accompanied by Director General Goshorn, Superintendent Albert, and others, visited Machinery Hall, at the Centennial on the evening of June 28th. Among other things inspected, at the invitation of E. M. BOYNTON, of New York, they witnessed a trial of the *New Lightning Saw*, patented March 26, 1876. Two men, with one of these saws, cut off a sound log of gum-wood, one foot extreme diameter, in seven seconds, or at the rate of a cord of wood in five minutes. Messrs. Corliss, Morell, Lynch, and other members of the commission, witnessed the triale and timed the cutting. The Emperor remarked, That was fast, very fast cutting. Last evening the Emperor made another examination of the saw.—*Philadelphia Press*, June 30.

"BOYNTON'S SAWS were effectually tested before the judges at the Philadelphia Fair, July 6th and 7th. An ash log, eleven inches in diameter, was sawed off, with a four-and-a-half-foot lightning cross-cut, by two men, in precisely six seconds as timed by the chairman of the Centennial Judges of Class Fifteen. The speed is unprecedented, and would cut a cord of wood in four minutes. The representatives of Russia, Austria, France, Italy, Spain, Belgium, Sweden, England, and several other countries, were present, and expressed their high appreciation."

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$1000 Challenge was prominently displayed for six months, and the numerous saw manufacturers of the world dared not accept it, or test in a competition so hopeless.

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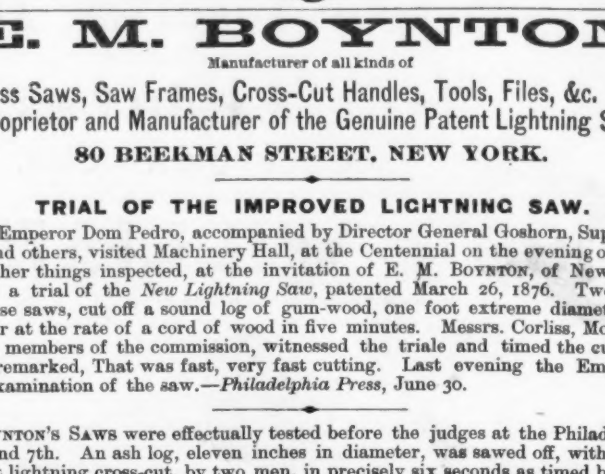

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